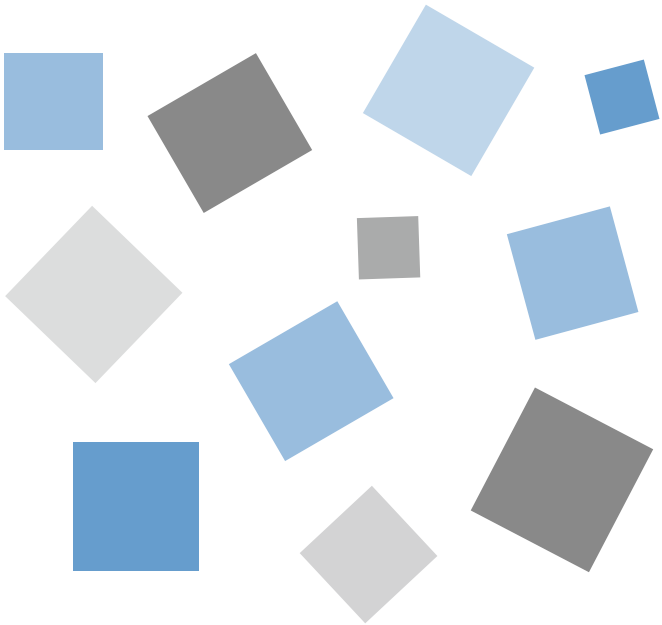
GL200

midi LOGGER Software

USER'S MANUAL

MANUAL NO. APS(GL200)-UM-151



GRAPHTEC

Contents

1. Main Features 1
2. System Requirements 1
3. Installing the USB Driver 2
4. Connecting to a PC (Personal Computer) 5
5. Installing the GL200 Application Software 6
6. Launching the Software 6
7. PC Connection Settings 7
8. Display Screens
   - 8-1 Y-T (Main Screen) 8
   - 8-2 X-Y 10
   - 8-3 Digital 11
   - 8-4 Meter 12
   - 8-5 Report 13
   - 8-6 CSV File Batch Conversion 14
   - 8-7 Alarm 15
   - 8-8 Statistics/Log 15
   - 8-9 Comment 15
   - 8-10 Waveform Op. 16
   - 8-11 Opening Data Captured to the PC 18
   - 8-12 Review PC (Waveform Display) 20
   - 8-13 Review PC (Digital Display) 21
   - 8-14 Superimpose/Link 22
   - 8-15 Convert then Save 22
   - 8-16 Display in Excel 22
   - 8-17 XY between cursors 23
9. Settings Screens
   - 9-1 AMP Settings 24
     - 9-1-1 Span Settings 25
     - 9-1-2 Scaling Settings 25
   - 9-2 Data Capture Settings 26
     - 9-2-1 Device Capture Settings 27
     - 9-2-2 PC Capture Settings 27
   - 9-3 Trigger/Alarm Settings 28
     - 9-3-1 Level Condition 29
     - 9-3-2 Alarm Condition 30
     - 9-3-3 Send Email when Alarm is Generated 30
   - 9-4 Report Settings 31
   - 9-5 Other Settings 32
10. Operating Procedure
   - 10-1 Capture Settings 33
     - 10-1-1 AMP Settings 33
     - 10-1-2 Data Capture Settings 33
   - 10-2 Start 34
   - 10-3 Displaying past data during a data capture operation 34
   - 10-4 Stop 35
   - 10-5 Replay Data 35

1. Main Features

- **A variety of display formats**
  Data can be viewed in Y-T, X-Y, Digital, Meter, and Report formats, on large, easy-to-read screens.

- **Export to Direct Excel File Function**
  Captured data can be exported directly to an Excel file and displayed as graphs. Ready-to-use template files are provided as standard for your convenience.
  (Note: The Microsoft Excel program must be installed.)

- **Thumbnail waveform display**
  Before replaying captured data, the waveforms can be checked by referring to the small images (thumbnails) provided next to each file name. These thumbnails provide easy confirmation of the data before opening the file.

- **The maximum and minimum values for all the channels can be checked at any time during data capture.**

- **Real-time calculation functions**
  During data capture and data replay operations, up to four calculation operations can be performed. The calculation results can be viewed as a waveform.

- **Send Email when Alarm is Generated**
  When an alarm is generated, this function enables a notification email to be sent to a mobile phone, for example, thereby ensuring that a check can be performed if required.
  (Note: An email sending environment is required.)

- **Printing function, Screen save function**
  The waveform screen can be printed out on a printer, and screen copies saved to a file.
  (Note: To use the printing function, the device must be connected to a printer.)

- **Help function**
  Help buttons that provide simple descriptions of the various functions are assigned to each of the menu setting items to provide ease of use.

2. System Requirements

Make sure that the computer on which you plan to install the software meets the following requirements.

Item	System requirements
OS	Windows 2000, XP
CPU	Pentium 4: 1.7 GHz or higher
Memory	256 MB or more
HDD	20 MB additional space is required for installing software
Display	1024 x 768 resolution or higher 65535 colors or more (16-bit or more)
Other	USB port, CD-ROM drive (for installing from CD) Microsoft Excel software (for the Export to Direct Excel File and Display in Excel functions)

CHECKPOINT

Even when using a PC that meets the system requirements, measurement data may not be captured correctly depending on the PC status (e.g. running other applications or insufficient memory capacity in the storage media used). Exit all other applications before capturing data to the internal hard disk.

3. Installing the USB Driver

This chapter describes how to install the USB driver.

Checking the version of your USB driver

This section describes how to view the version of the USB driver if it is already installed.

(1) Opening "Device Manager"
Select "Control Panel" → "System" → "Hardware" tab or right-click "My Computer", select "Properties" → "Hardware" tab → "System Properties" window, and then click the "Device Manager" button.

(2) In the "Device Manager" window, open "USB (Universal Serial Bus) Controller". Confirm that "Graphtec DM/GL/WR Series USB Driver" is shown. Right-click it and select "Properties".

(3) Updating the driver
Select the "Driver" tab and click the "Driver Details" button.

(4) Select [...\GTCUSBR.SYS] to view the version of the driver file.

Installing the USB Driver

This section describes how to install the USB driver.

(1) Insert the User's Guide CD-ROM provided as a standard accessory into the PC's CD-ROM drive.

(2) Connecting the GL200 to the PC.
Connect the GL200 to the PC using the USB cable, and then turn the power on.

(3) Install the USB driver. The installation procedure depends on the type of operating system and whether or not you are installing the driver for the first time.

- Windows XP: Driver software is to be installed for the first time.
  Driver software is already installed.
- Windows 2000: Driver software is to be installed for the first time.
  Driver software is already installed.

● Windows XP: Driver software is to be installed for the first time.

Installing the USB driver.

(1) Detecting the hardware
Connect the USB cable to the PC and GL200. The "Found New Hardware" message appears.

(2) Starting the wizard
In the "Found New Hardware Wizard" window, select "Install from a list or specific location (Advanced)" under "What do you want the wizard to do?" and click "Next".

(3) In the "Please choose your search and installation options." window, select "Don't search. I will choose the driver to install." and click "Next".

(4) In the "Select the device driver you want to install for this hardware." window, click "Have Disk".

(5) In the "Install from Disk" window, browse the CD-ROM under "Copy manufacturer's files from", select "USB DRIVER" → "GTCUSBR.INF" and click "OK".

(6) In the "Select the device driver...." window, "Graphtec DM/GL/WR Series USB Driver" appears in the "Model" box. Select it and click "Next".

(7) Installing the driver
Windows XP starts installing the driver. Depending on the OS settings, the following error message may be displayed: "The software you are installing for this hardware: GL200 has not passed Windows Logo testing to verify its compatibility with Windows XP." Click the "Continue" button to proceed with the installation.

(8) Completing installation
The "Completing the Found New Hardware Wizard" window appears. Click "Finish" to exit the wizard.

● Windows XP: Driver software is already installed.

Updating the USB driver

(1) Opening "Device Manager"
Select "Control Panel" →"System" → "Hardware" tab or right-click "My Computer", select "Properties" → "Hardware" tab → "System Properties" window, then click the "Device Manager" button.

(2) In the "Device Manager" window, open "USB (Universal Serial Bus) Controller". Confirm that "Graphtec DM/GL/WR Series USB Driver" is shown. Right-click it and select "Properties".

(3) Updating the driver
Select the "Driver" tab and click "Update Driver".

(4) Starting the update wizard
The "Hardware Update Wizard" appears. Select "Install from a list or specific location (Advanced)" under "What do you want the wizard to do?" and click "Next".

(5) In the "Please choose your search and installation options." window, select "Don't search. I will choose the driver to install." and click "Next".

(6) In the "Select the device driver you want to install for this hardware." window, click "Have Disk".

(7) In the "Locate File" window, browse the CD-ROM, select "USB DRIVER" → "GTCUSBR.INF" and click "Open".

(8) Return to the "Select the device driver" window and click "Next".

(9) Installing the driver
Windows XP starts installing the driver. Depending on the OS setting, "The software you are installing for this hardware: GL200 has not passed Windows Logo Testing to verify its compatibility with Windows XP" message may appear. Simply click "Continue Anyway".

(10) Completing the installation
The "Completing the Hardware Update Wizard" window appears. Click "Finish" to exit the wizard.

● Windows 2000: Driver software is to be installed for the first time.

Installing the USB driver

(1) Starting the wizard
Connect the USB cable to the PC and the GL200. The "Found New Hardware" wizard appears.

(2) In the "Found New Hardware Wizard" window, select "Search for a suitable driver for my device (Recommended)" under "What do you want the wizard to do?" and click "Next".

(3) In the "Locate Driver File" window, select "CD-ROM drive" under "Optional search locations" and click "Next".

(4) Browse the CD-ROM, select "USB DRIVER" → "GTCUSBR.INF" and click "OK".

(5) "The wizard found a driver" message appears. Click "Next".

(6) Completing installation
The "Completing Found New Hardware Wizard" window appears. Click "Finish" to exit the wizard.

● Windows 2000: Driver software is already installed.

Updating the USB driver

(1) Opening "Device Manager"
Select "Control Panel" → "System" → "Hardware" tab or right-click "My Computer", select "Properties" → "Hardware" tab → "System Properties" window, then click the "Device Manager" button.

(2) In the "Device Manager" window, open "USB (Universal Serial Bus) Controller". Confirm that "Graphtec DM/GL/WR Series USB Driver" is shown. Right-click it and select "Properties".

(3) Updating the driver
Select the "Driver" tab and click "Update Driver".

(4) Starting the update wizard
"Upgrade Device Driver Wizard" appears. Click "Next".

(5) In the "Install Hardware Device Drivers" window, select "Display a list of the known drivers for this device so that I can choose a specific driver." under "What do you want the wizard to do?" and click "Next".

(6) In the "Select a Device Driver" window, click "Have Disk".

(7) In the "Locate File" window, browse the CD-ROM, select "USB DRIVER" → "GTCUSBR.INF" and click "OK".

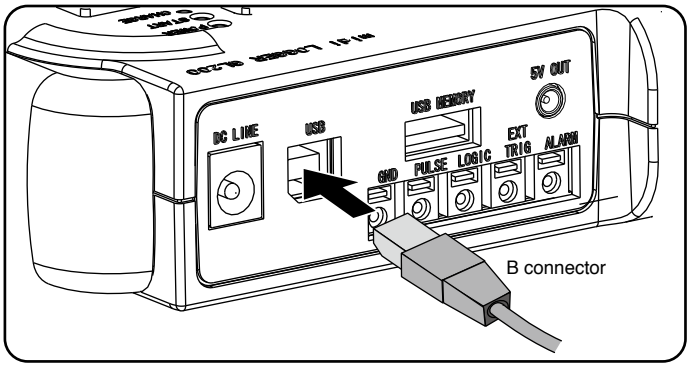
(8) Return to the "Select a Device Driver" window and click "Next".

(9) In the "Start Device Driver Installation" window, click "Next".

(10) Completing installation
The "Completing the Upgrade Device Driver Wizard" window appears. Click "Finish" to exit the wizard.

4. Connecting to a PC (Personal Computer)

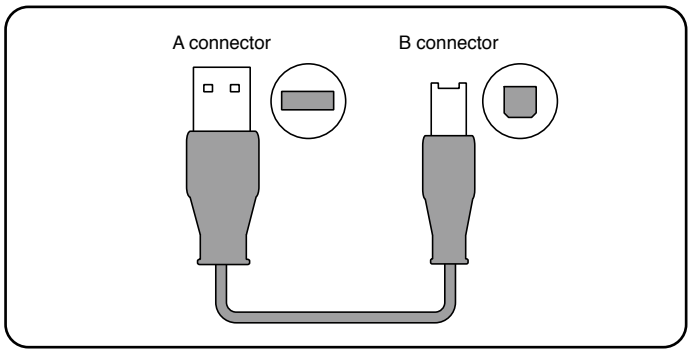
The GL200 is connected to a PC via a USB cable.



Note: When using a USB cable, a USB driver must be installed in the PC. Please see Section 3, "Installing the USB Driver" for the installation procedure.

Connection Method

Use an A-B type USB cable to connect the GL200 to a PC.



5. Installing the GL200 Application Software

This chapter describes how to install the application software.

(1) Insert the User's Guide CD-ROM provided into the PC's CD-ROM drive.

(2) Click the Taskbar's Start button, and then click the Run... icon to open the "Run" window.

(3) Enter the CD-ROM drive name and \English\midi LOGGER Software\Setup.exe as the name of the file you wish to open. If the disk is in drive D, for example, enter "D\English\ midi LOGGER Software\Setup.exe" in the box and then click "OK" to launch the installer.

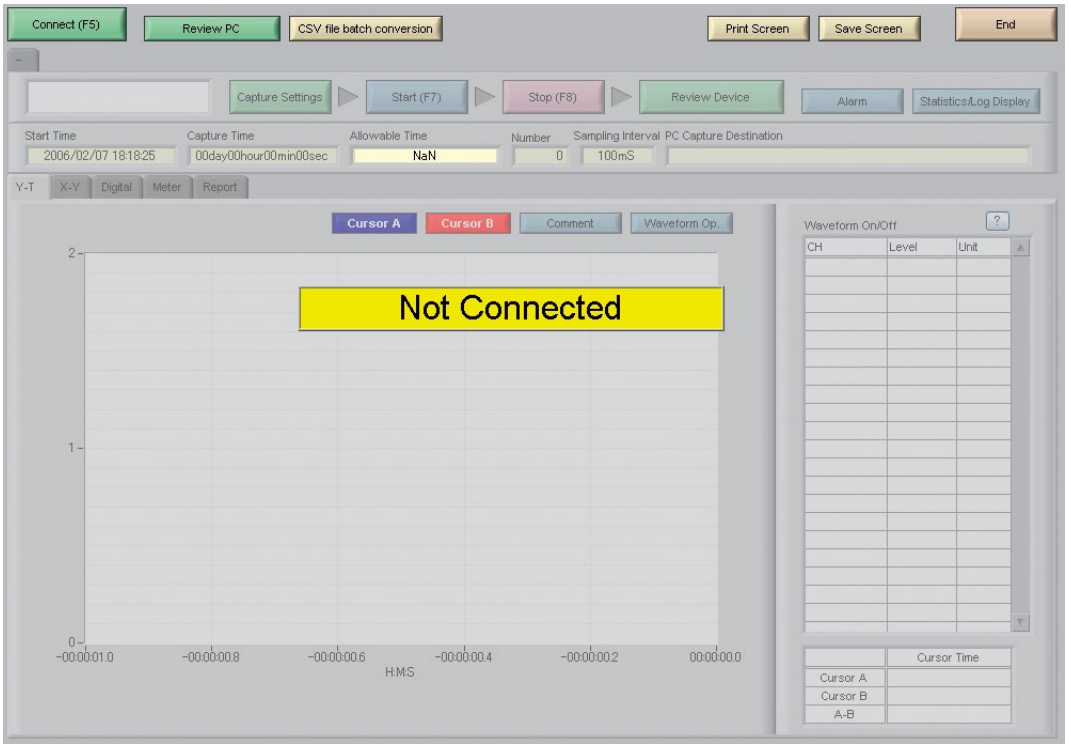
(4) Follow the instructions on the screen to continue with the installation.

Note: Be sure to observe the following points when connecting the GL200 to a PC.

- *Do not connect any devices apart from a mouse or a keyboard to any of the other USB terminals on your PC.*
- *Set the PC's power-saving functions to Off.*
- *Set the Screen Saver to Off.*
- *Set the anti-virus software auto update and scan scheduler functions to Off. Also, set the Windows auto update and scheduler functions to Off.*

6. Launching the Software

Click the Taskbar's "Start" button → "Programs" → "midi LOGGER Software" to launch the application software. Once the program has started up, the following screen is displayed.

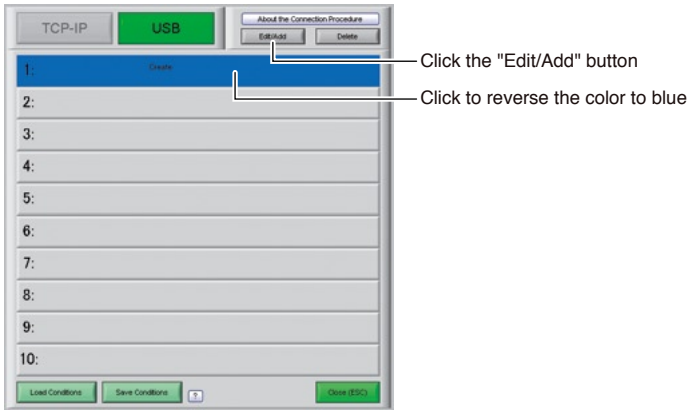


7. PC Connection Settings

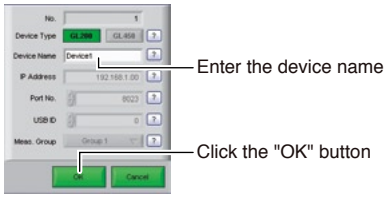
The GL200 is connected to a computer via USB to enable communication between the devices.

(1) Click the "Connect (F5)" button on the main menu to display the Connect screen.

(2) Click row "1:" to reverse the display color to blue, and then click the "Edit/Add" button.

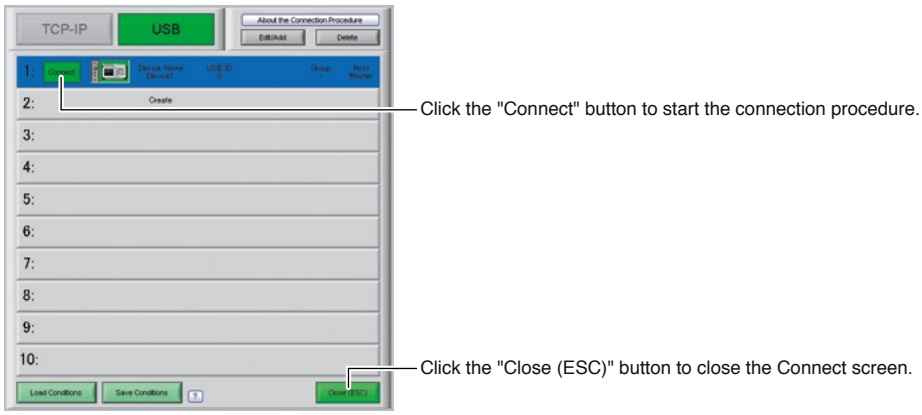


(3) Enter the name of the connected device, and then click the "OK" button. If a device name is not entered, it will automatically be assigned the name "Device1".



(4) Click the "Connect" button to perform the connection to enable communication between the devices.

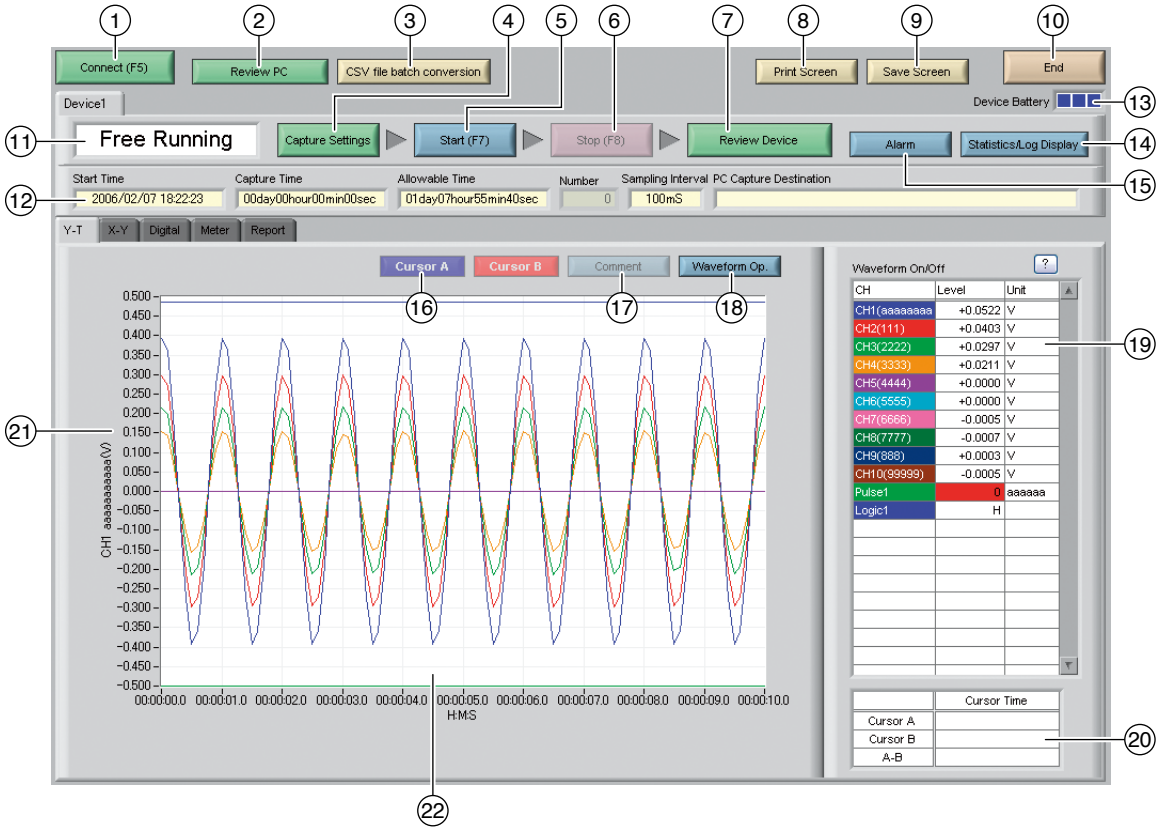
(5) Click the "Close (ESC)" button to close the Connect screen.



8. Display Screens

This chapter describes the various screens used in this software.

8-1 Y-T (Main Screen)



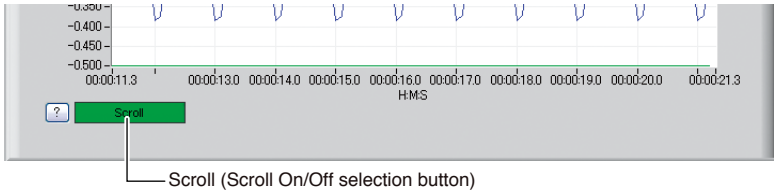
No.	Name	Description	Ref. Page No.
1	Connect (F5)	Click this button to open the Connect screen.	p.7
2	Review PC	Click this button to replay the data captured to the PC (personal computer).	p.20
3	CSV file batch conversion	Click this button to convert multiple GBD (binary data) files captured to the PC to CSV files.	p.14
4	Capture Settings	Click this button to open the data capture settings screen.	p.24
5	Start (F7)	Click this button to start data capture.	
6	Stop (F8)	Click this button to stop data capture.	
7	Review Device	Click this button to replay the data captured to the device.	p.20
8	Print Screen	Click this button to print out a copy of the screen. Printing is performed at the printer that has been selected as the default printer. If you change the printer, relaunch the software.	
9	Save Screen	Click this button to save the displayed screen as a BMP file.	
10	End	Click this button to exit the application.	
11	Simplified message area	The operating status is displayed here. Free Running: Stopped status. (not capturing data) Armed: Awaiting trigger activation; data has not been captured. Recording...: Data capture status. Capture Ended: Data captured has ended. Click the "Stop" key.	
12	Capture Information	Information is displayed here during a data capture operation. Start Time: Data capture start time. Capture Time: The amount of time that has elapsed since the start of data capture. Allowable Time: The amount of time available for data capture. When the remaining time is up, data capture stops at both the device and the PC. Number: The number of data capture operations when Repeat Capture has been specified. Sampling Interval: The sampling interval. PC Capture Destination: The data capture destination at the PC.	

No.	Name	Description	Ref. Page No.
13	Battery Information	The device battery capacity is displayed here. When the AC power supply is being used: (blue, blue, blue) Battery power: Full: (green, green, green) Battery power: Medium: (—, orange, orange) Battery power: Low: (—, —, red) Battery power: Very low: (—, —, —) Data capture stops if a capture operation is being performed.	
14	Statistics/Log Display	Click this button to display the results of statistical calculation performed during data capture, and a log of the alarms generated.	p.15
15	Alarm	Click this button to display the alarm output port status. If "Alarm Hold" has been selected, the alarm can be cleared by clicking the "Alarm Clear" button.	p.15
16	Cursors	Click these buttons to display the cursors during a data capture operation when the device is in the Scroll Off status.	
17	Comment	Click this button to enable a comment to be input above the desired CH waveform on the waveform graph displayed during data capture.	p.15
18	Waveform Op.	Click this button to perform various settings for the waveform display.	p.16
19	Digital	The digital values are displayed in this area. Clicking on any of the CH numbers enables the waveform for that channel to be hidden/displayed. The channels for which an alarm has been generated are shown in red.	
20	Cursor Time	The cursor times are displayed during data capture when Scroll Off has been selected.	
21	Y Axis Range	The Y axis scale for the waveform graph is displayed in this area. If "No Divisions" has been selected for the "Waveform Op." screen, the Y-axis scales for up to a maximum of four channels can be displayed.	
22	Waveform Graph	The waveforms are displayed here.	

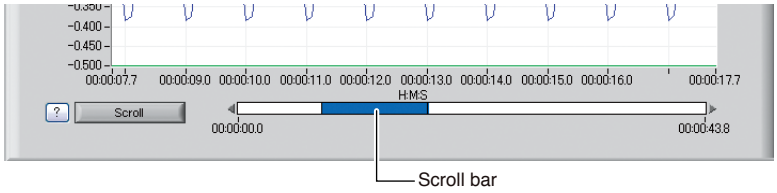
The waveform on your computer screen may differ from the waveform displayed on the device's display screen. This is because even though a slow sampling speed has been specified, the sampled data is being compressed for display.

The "Scroll" button is displayed on the Y-T screen during data capture. Use the "Scroll" button's On/Off functions to display current data and past data.
When Scroll On has been selected, the waveform graph is scrolled so that the data at the right edge is the newest data.
When Scroll Off has been selected, the scrolling operation is halted and data that was captured in the past can be viewed on the scroll bar.

Scroll On

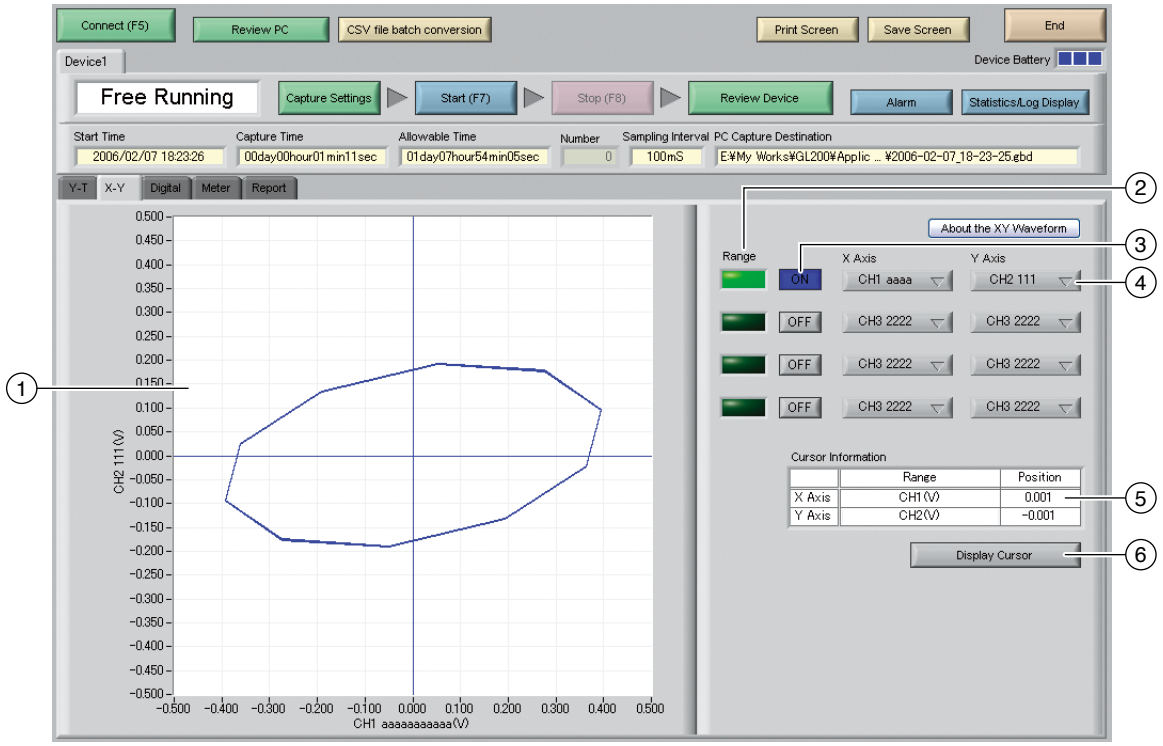


Scroll Off



8-2 X-Y

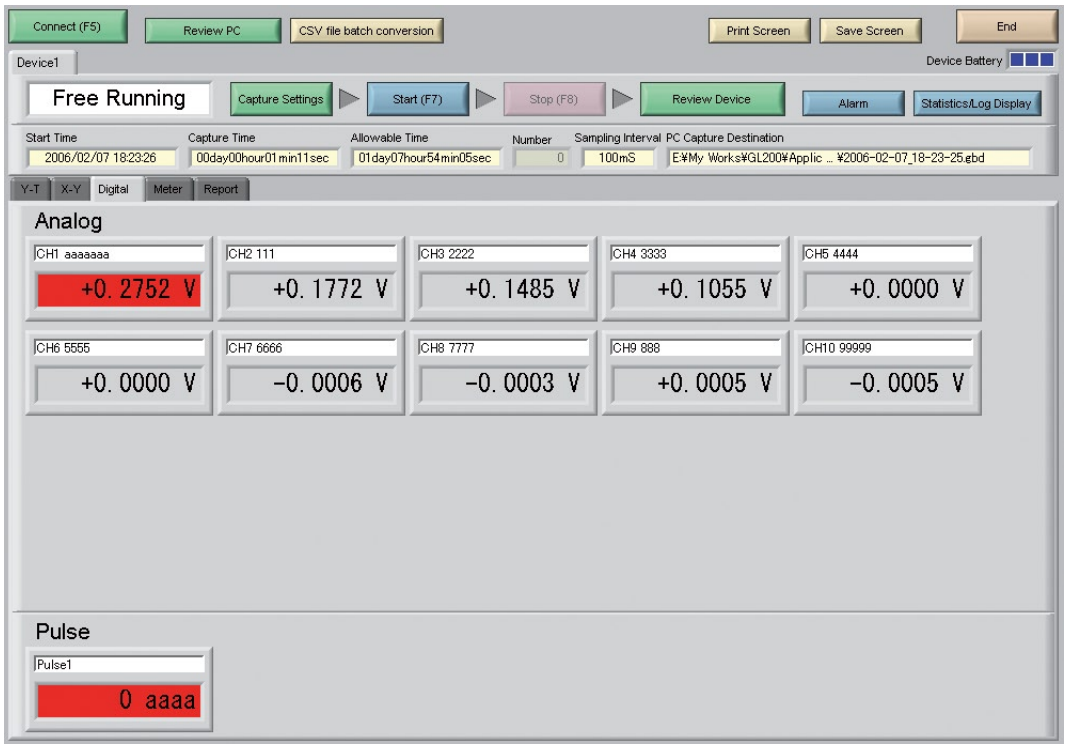
Up to four combinations can be handled, and the X-Y channels can be specified freely.



No.	Name	Description	Ref. Page No.
1	X-Y Waveform Graph	The X-Y waveforms are displayed here.	
2	Range	These buttons specify display of the scale values for the channels selected for the X and Y axes.	
3	ON/OFF	Click these buttons to specify the display as ON or OFF.	
4	X Axis/Y Axis Channel Settings	Use these buttons to select the channels for the X and Y axes.	
5	Cursor Information	The cursor levels of the channels for which Range has been specified are shown here.	
6	Display Cursor	Click this button to move the cursor to the center of the graph.	

8-3 Digital

The captured data is displayed as digital values. Instantaneous values are displayed in large characters to enable easy confirmation.



8-4 Meter

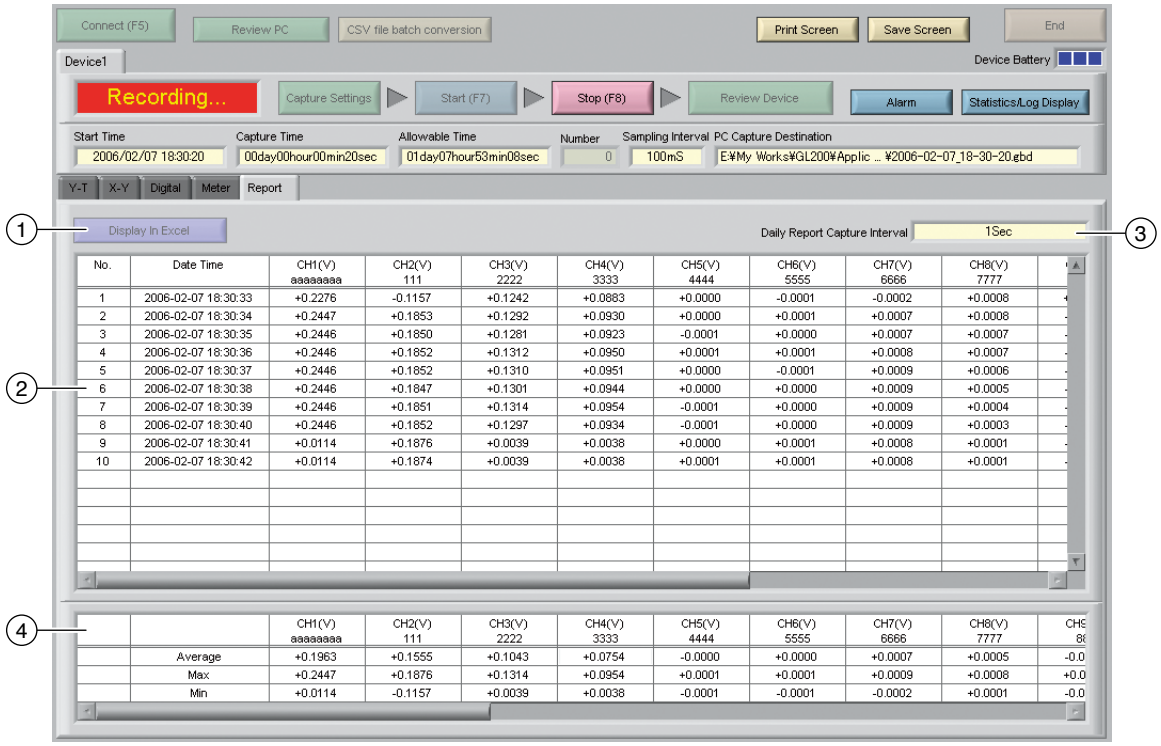
The inputs for each channel are displayed in a meter format.

No.	Name	Description	Ref. Page No.
1	Alarm Range	The alarm range is displayed in red.	
2	Instantaneous Value Level	This is the current input position.	

8-5 Report

The daily report data is displayed in this screen.
When the device is in the Free Running status, the data can be displayed in Excel format.
If Off has been specified for the Report setting, report data is not displayed.

Note: Daily report/Monthly report files cannot be replayed.



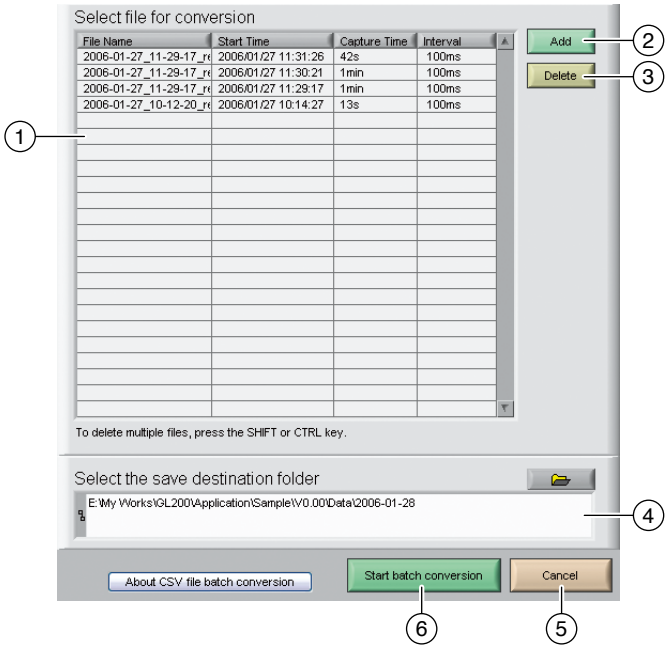
No.	Date Time	CH1(V) aaaaaaaa	CH2(V) 111	CH3(V) 2222	CH4(V) 3333	CH5(V) 4444	CH6(V) 5555	CH7(V) 6666	CH8(V) 7777
1	2006-02-07 18:30:33	+0.2276	-0.1157	+0.1242	+0.0883	+0.0000	-0.0001	-0.0002	+0.0008
2	2006-02-07 18:30:34	+0.2447	+0.1853	+0.1292	+0.0930	+0.0000	+0.0001	+0.0007	+0.0008
3	2006-02-07 18:30:35	+0.2446	+0.1850	+0.1281	+0.0923	-0.0001	+0.0000	+0.0007	+0.0007
4	2006-02-07 18:30:36	+0.2446	+0.1852	+0.1312	+0.0950	+0.0001	+0.0001	+0.0008	+0.0007
5	2006-02-07 18:30:37	+0.2446	+0.1852	+0.1310	+0.0951	+0.0000	-0.0001	+0.0009	+0.0006
6	2006-02-07 18:30:38	+0.2446	+0.1847	+0.1301	+0.0944	+0.0000	+0.0000	+0.0009	+0.0005
7	2006-02-07 18:30:39	+0.2446	+0.1851	+0.1314	+0.0954	-0.0001	+0.0000	+0.0009	+0.0004
8	2006-02-07 18:30:40	+0.2446	+0.1852	+0.1297	+0.0934	-0.0001	+0.0000	+0.0009	+0.0003
9	2006-02-07 18:30:41	+0.0114	+0.1876	+0.0039	+0.0038	+0.0000	+0.0001	+0.0008	+0.0001
10	2006-02-07 18:30:42	+0.0114	+0.1874	+0.0039	+0.0038	+0.0001	+0.0001	+0.0008	+0.0001

		CH1(V) aaaaaaaa	CH2(V) 111	CH3(V) 2222	CH4(V) 3333	CH5(V) 4444	CH6(V) 5555	CH7(V) 6666	CH8(V) 7777
	Average	+0.1963	+0.1555	+0.1043	+0.0754	-0.0000	+0.0000	+0.0007	+0.0005
	Max	+0.2447	+0.1876	+0.1314	+0.0954	+0.0001	+0.0001	+0.0009	+0.0008
	Min	+0.0114	-0.1157	+0.0039	+0.0038	-0.0001	-0.0001	-0.0002	+0.0001

No.	Name	Description	Ref. Page No.
1	Display in Excel	The data is displayed in Excel format when the device is in the Free Running status.	
2	Daily Report data	The daily report data is displayed here. If the number of points exceeds 100, data is deleted starting from the oldest data (the actual data is not affected).	
3	Daily Report Capture Interval	The daily report capture interval is displayed here.	
4	Calc. results	The calculated results for the average, maximum and minimum values are displayed here.	

8-6 CSV File Batch Conversion

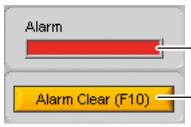
This function enables multiple GBD (binary data) files to be converted in a batch to CSV format files.



No.	Name	Description	Ref. Page No.
1	List of converted files	The batch-converted files are displayed in a list.	
2	Add	Click this button to add a file to the batch to be converted.	
3	Delete	Click this button to remove a file from the batch to be converted.	
4	Save destination folder	Select the save destination for the batch-converted files here.	
5	Cancel	Click this button to cancel the batch conversion operation and close the screen.	
6	Start batch conversion	Click this button to start batch file conversion.	

8-7 Alarm

The alarm output port status is displayed in this screen, together with the Alarm Clear button.



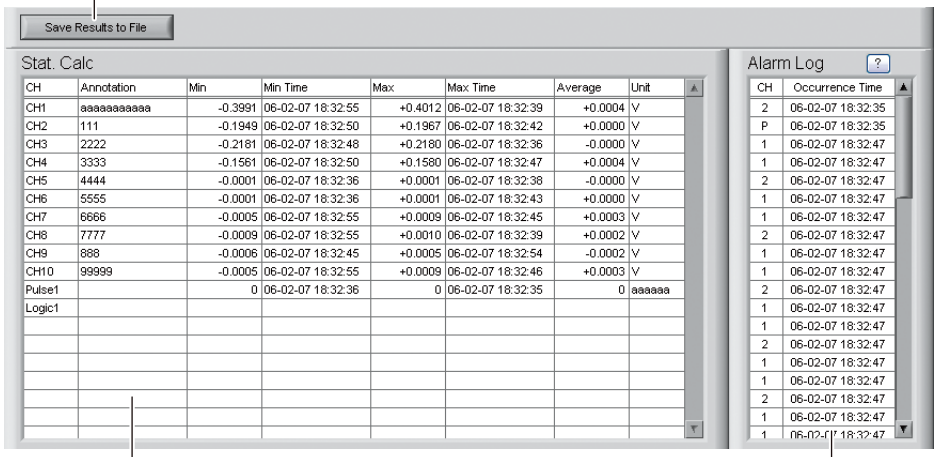
Red = alarm generated; White = alarm not generated

Click this button to clear the alarm.
If this button is clicked when On has been specified for the "Alarm Hold" status, the alarm is cleared.

8-8 Statistics/Log

The statistical calculation and alarm log results are displayed in this screen.

Save results to a CSV file.

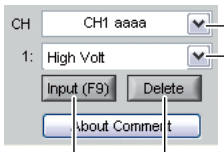


Stat. Calc: The statistical calculation results are displayed here.

Alarm Log: The alarm log is displayed here.

8-9 Comment

Use this function to input a comment above the waveform of the desired channel during a data capture operation.



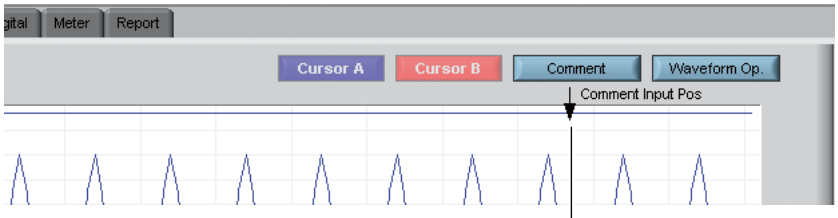
Use this button to select the channel for input.

Use this button to input the comment(s).
- Up to 20 comments can be input.
- If you change the comment at a location where a comment has already been input, the original comment will be changed.
- If the location is one where there is no existing comment, the comment will be input as a new comment.

Click this button to delete the comment that was input.

Click this button to input the comment.

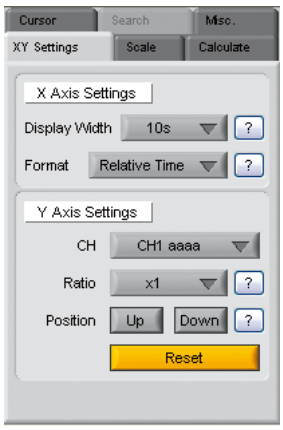
- When On has been selected for Scroll: The comment is input at "Comment Input Pos" above the waveform graph.
- When Off has been selected for Scroll: The comment is input at the position above Cursor A.



Comment input position when On has been selected for Scroll.

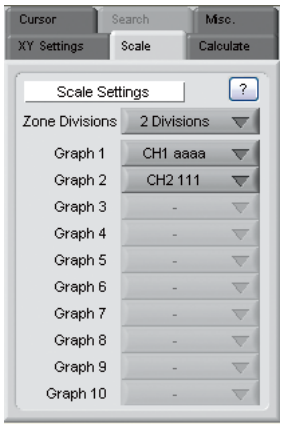
8-10 Waveform Op.

Various waveform operations can be performed when the device is in the Free Running, Data Capture or Data Replay status.
(Note: In the tables, F = operation possible in Free Running status, C = operation possible in Data Capture status, and R = operation possible in Data Replay status.)



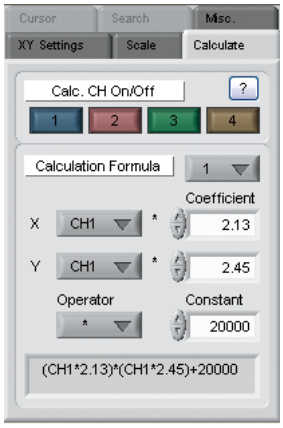
XY Settings

Item	Description	Applicable Status
X Axis Settings		
Display Width	Use this button to select the X-axis width for the waveform graph.	C, R
Format	Use this button to select the format for the waveform graph. Sec, Relative Time, Absolute Time	C, R
Y Axis Settings		
CH	Use this button to select the channel for changing the Y axis.	F, C, R
Ratio	Use this button to select the Y-axis waveform ratio.	F, C, R
Position	Use these buttons to move the position of the Y axis.	F, C, R
Reset	Click this button to reset the Ratio and Position settings.	F, C, R



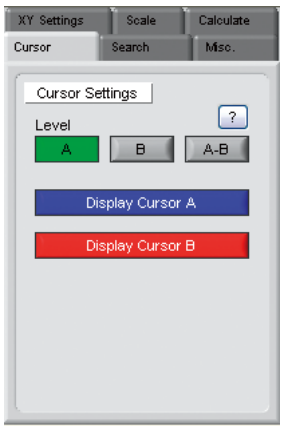
Scale

Item	Description	Applicable Status
Scale Settings		
Zone Divisions	Use this button to divide the waveform into zones. No Divisions, 2 Divisions, 5 Divisions, 10 Divisions.	F, C, R
Y Axis 1- 4 (When No Divisions was selected)	This parameter is used to specify the channels for Y Axis Range 1 to 4.	F, C, R
Graph (When 2, 5, or 10 Divisions has been specified)	One Y axis range can be specified to each graph that has been assigned to a division.	F, C, R



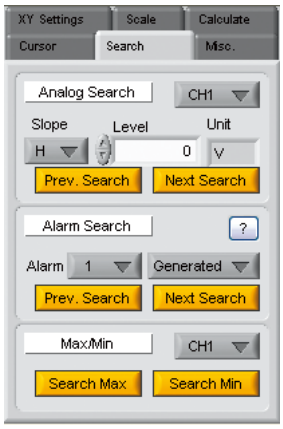
Calculate

Item	Description	Applicable Status
Calc. CH On/Off		
1 to 4	The calculation channels 1 to 4 can be specified as On or Off. On: The calculated results are displayed as waveforms and as digital values.	F, R
Calculation Formula		
	This parameter is used to select the variables for the linear expression between channels. A • CH X * B • CH Y + C The specified calculation formula is shown at the bottom of the screen.	F, R



Cursor

Item	Description	Applicable Status
Cursor Settings		
Level	This parameter is used to specify the level values that are displayed in the Digital area of the screen. A: The cursor A level is displayed. B: The cursor B level is displayed. A-B: The difference between the A and B levels is displayed.	C, R
Display Cursor A Display Cursor B	Click the appropriate button to move Cursor A or B within the currently displayed waveform graph.	C, R



Search

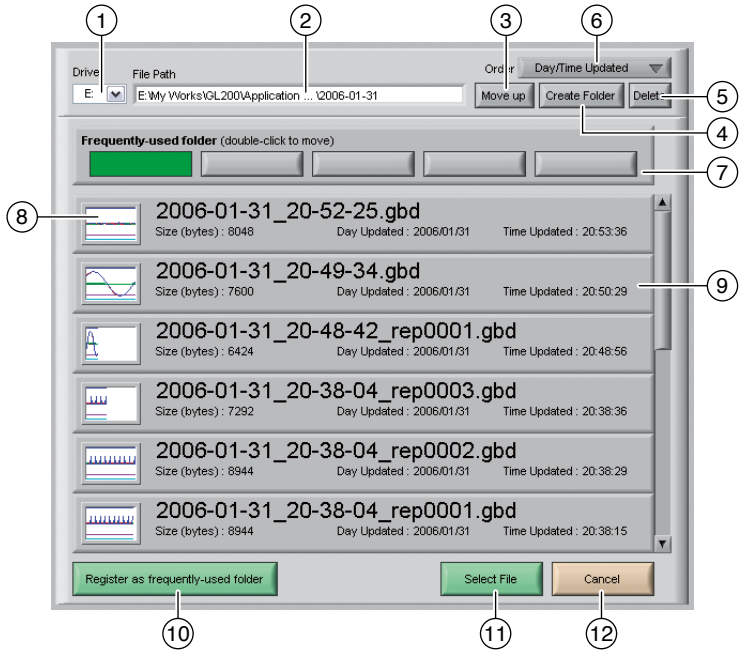
Item	Description	Applicable Status
Analog Search ("Edge" is used for the search judgment criterion)		
CH	Use this button to select the CH to be searched.	R
Slope	Use this button to select the slope to use for performing the search. H: Search for a rising signal. L: Search for a falling signal.	R
Level	Use this button to set the search level.	R
Prev. Search	Search in the past direction.	R
Next Search	Search in the forward direction.	R
Alarm Search ("Edge" is used for the search judgment criterion)		
Alarm	This parameter is used to specify the alarm port number (fixed).	R
Slope	Use this button to select the slope to use for performing the search. Generated Cleared	R
Prev. Search	Search in the past direction.	R
Next Search	Search in the forward direction.	R
Max/Min		
CH	Use this button to select the CH to be searched.	R
Search Max	A search is made for the maximum value data.	R
Search Min	A search is made for the minimum value data.	R

Misc.

Item	Description	Applicable Status
Misc.		
Plot	Select "On" to display plot marks at data points on the waveform graph. The plot marks are drawn at the captured data points.	F, C, R

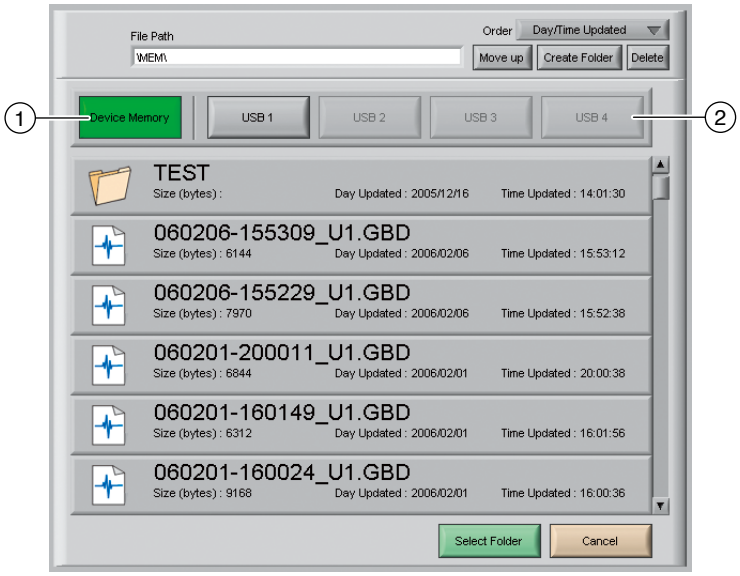
8-11 Opening Data Captured to the PC

This section explains how to replay data that has been captured to your PC (personal computer). Click the "Review PC" button that is indicated by the number "2" in Section 6.1, "Y-T". The data files captured to the PC will be displayed together with thumbnails (small index images).



No.	Name	Description	Ref. Page No.
1	Drive	Use this button to select the appropriate PC drive.	
2	File Path	The file location is displayed here.	
3	Move up	Click this button to move up to the next level.	
4	Create Folder	Click this button to create a new folder.	
5	Delete	Click this button to delete the selected file.	
6	Order	Use this button to select the file arrangement order. File Name: The files are arranged by file name. Day/Time Updated: The files are arranged starting from the latest updated day/time.	
7	Frequently-used folder	Use these buttons to select a frequently-used folder and move the file to that folder. Single click: Select Double click: Move	
8	Waveform thumbnail	The captured data is displayed as a compressed waveform. Thumbnails can only be displayed for data that was captured using this software. Moreover, data that was captured to the device itself cannot be displayed as thumbnails.	
9	File list	The captured data is displayed in a list format.	
10	Register as frequently-used folder	Click this button to register the currently displayed folder as one of the frequently-used folders described in Item 7 above.	
11	Select File	Click this button to select a file (display the file).	
12	Cancel	Click this button to cancel the selected file.	

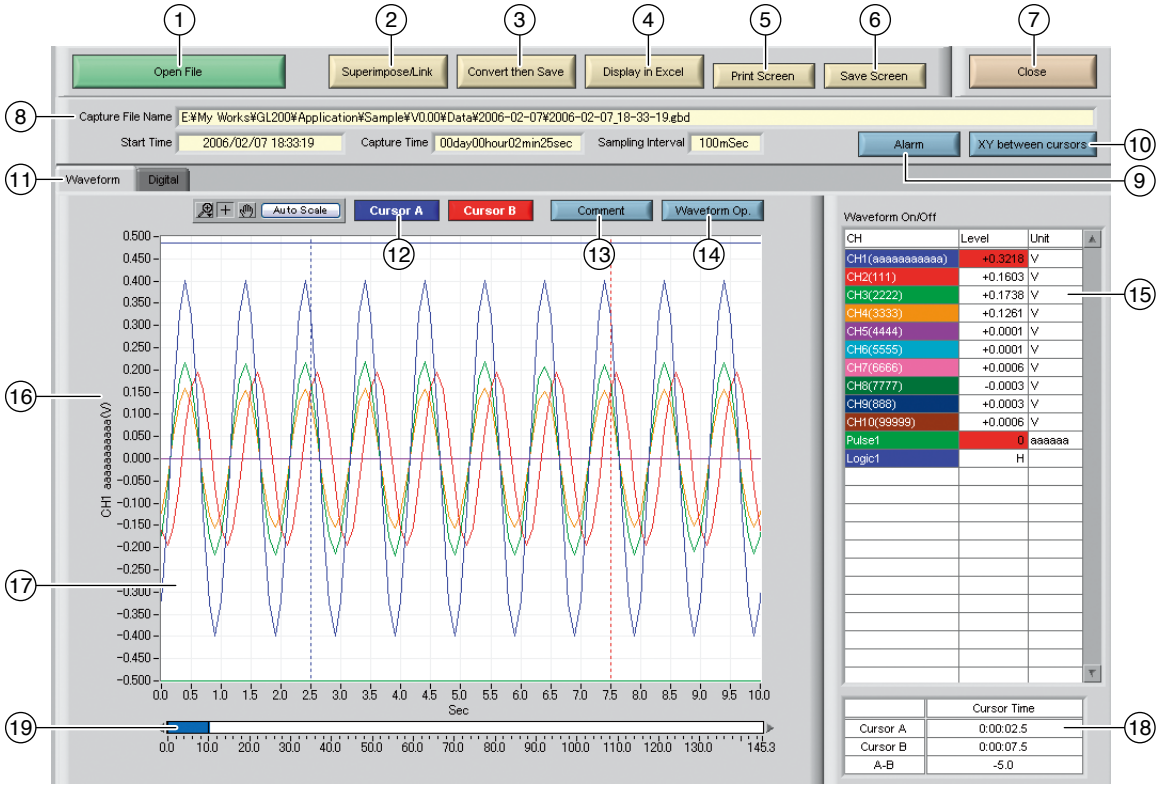
When replaying data that has been captured to the device, the following screen is displayed to enable a file to be opened.



No.	Name	Description	Ref. Page No.
1	Device Memory	Click this button to display the files saved to the internal memory.	
2	USB Device	Click the appropriate button to display the files saved to the selected USB device.	

8-12 Review PC (Waveform Display)

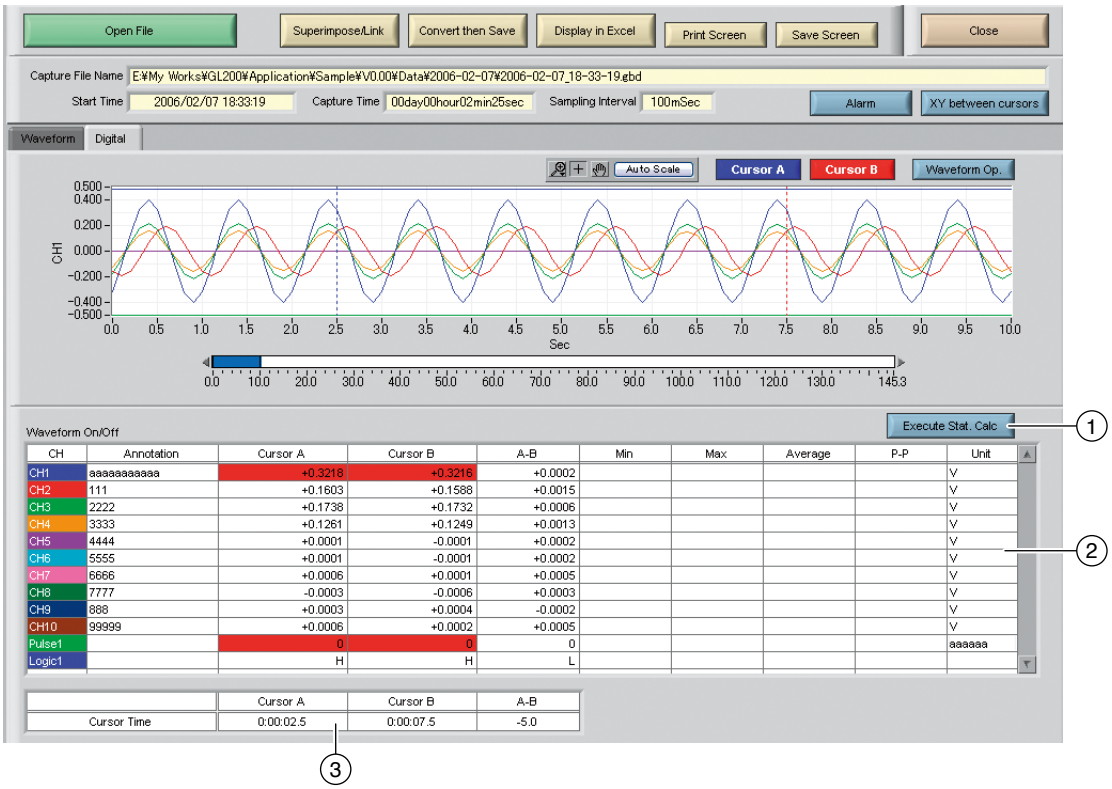
At the waveform display screen, operations such as checking and conversion of the waveforms of data that has been captured, and the input and editing of comments can be performed. These operations can also be performed for Review Device.



No.	Name	Description	Ref. Page No.
1	Open File	Click this button to open the screen described in Section 8-11, "Opening Data Captured to the PC".	p.18
2	Superimpose/Link	Click this button to display a screen showing superimposed or linked data from multiple files.	p.22
3	Convert then Save	Click this button to convert the replayed data to a different file format (GBD, CSV) or to clip and save only the data between the cursors.	p.22
4	Display in Excel	Click this button to display the captured data in Excel format. The Microsoft Excel program must be installed before you can use this function.	p.22
5	Print Screen	Click this button to print out a copy of the screen at your printer.	
6	Save Screen	Click this button to save the displayed screen as a BMP file.	
7	Close	Click this button to close the replay screen.	
8	Replay information	The replay information is displayed here. Capture File Name: The name of the data capture file that is being replayed. Start Time: The time at which data capture was started. Capture Time: The data capture time. Sampling Interval: The sampling interval.	
9	Alarm	Click this button to display the alarm port status.	p.15
10	XY between cursors	Click this button to display the data between the A and B cursors in X-Y format.	p.23
11	Change display	Click this tab to change the display screen.	p.21
12	Cursor	Click these buttons to display the cursors.	
13	Comment	Click this button to enable a comment to be input above the desired CH waveform.	p.15
14	Waveform Op.	Click this button to display a screen for making various settings for the waveform display.	p.16
15	Digital	The digital values are displayed in this area. Clicking on any of the CH numbers enables the waveform for that channel to be hidden/displayed. The channels for which an alarm has been generated are shown in red.	
16	Y Axis Range	The Y axis scale for the waveform graph is displayed in this area. If "No Divisions" has been selected for the "Waveform Op." screen, the Y-axis scales for up to a maximum of four channels can be displayed.	
17	Waveform Graph	The waveforms are displayed here.	
18	Cursor Time	The cursor times are displayed here.	
19	Scroll Bar	Use this bar to move the waveform.	

8-13 Review PC (Digital Display)

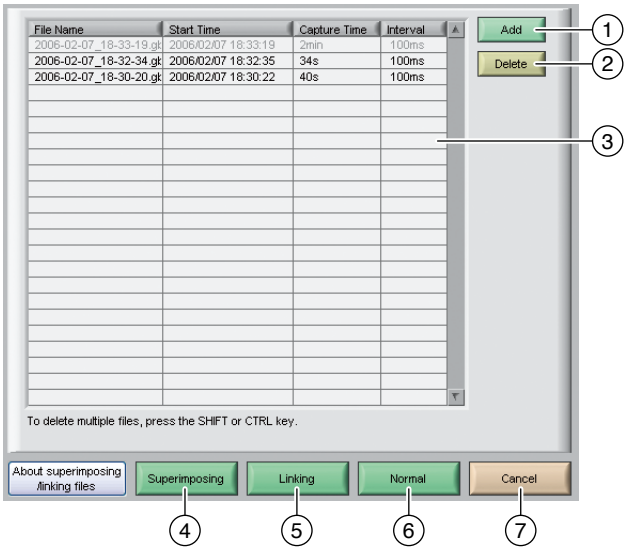
To select the Digital screen, click the displayed tab (Item 11 "Change tab" in Section 8-12, "Review PC (Waveform Display)". The Digital screen is used mainly to perform operations such as statistical calculation using the A and B cursors.



No.	Name	Description	Ref. Page No.
1	Execute Stat. Calc	Click this button to perform statistical calculation of the data between Cursors A and B.	
2	Digital display	The cursor A and B levels, calculation results, and so forth are displayed here.	
3	Cursor Time	The cursor A and B times are displayed here.	

8-14 Superimpose/Link

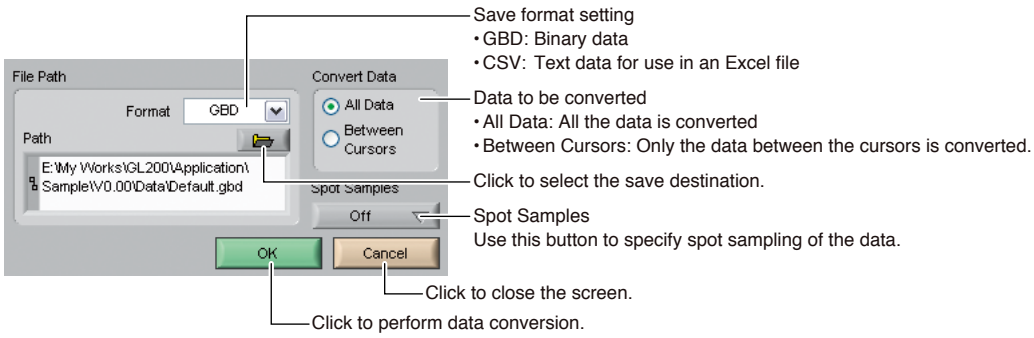
This function enables multiple files to be superimposed on the display, or to be linked.



No.	Name	Description	Ref. Page No.
1	Add	Click this button to add a file to those selected for the superimposing or linking operation.	
2	Delete	Click this button to delete the added file from the list.	
3	File list	The files added to those selected for superimposing or linking are listed here.	
4	Superimpose	Click this button to superimpose files.	
5	Link	Click this button to link files.	
6	Normal	Click this button to open the original file without performing any superimposing or linking operations.	
7	Cancel	Click this button to close the screen.	

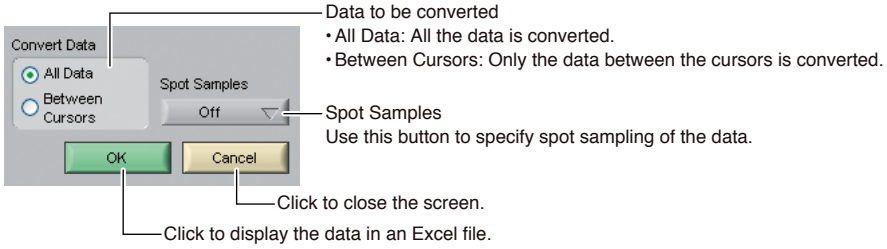
8-15 Convert then Save

This function is used to convert replayed data to a different format (GBD, CSV), and to clip and save only the data between the cursors.



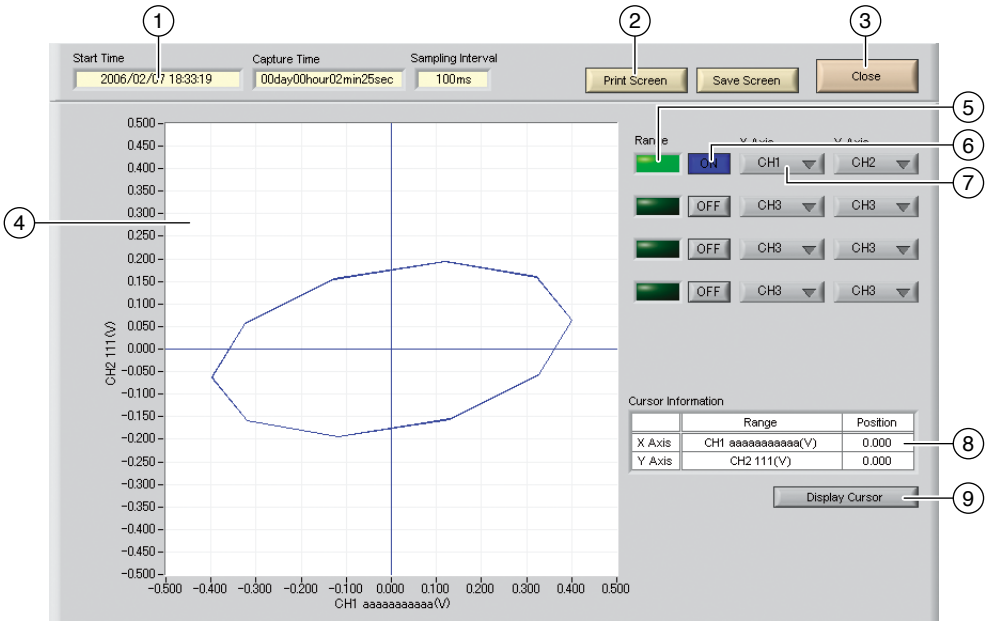
8-16 Display in Excel

This function is used to launch Excel and display the data in a new worksheet. (The Microsoft Excel program must be installed in order for this function to be used.)



8-17 XY between cursors

This function is used to display the data between the A and B cursors in an XY format.



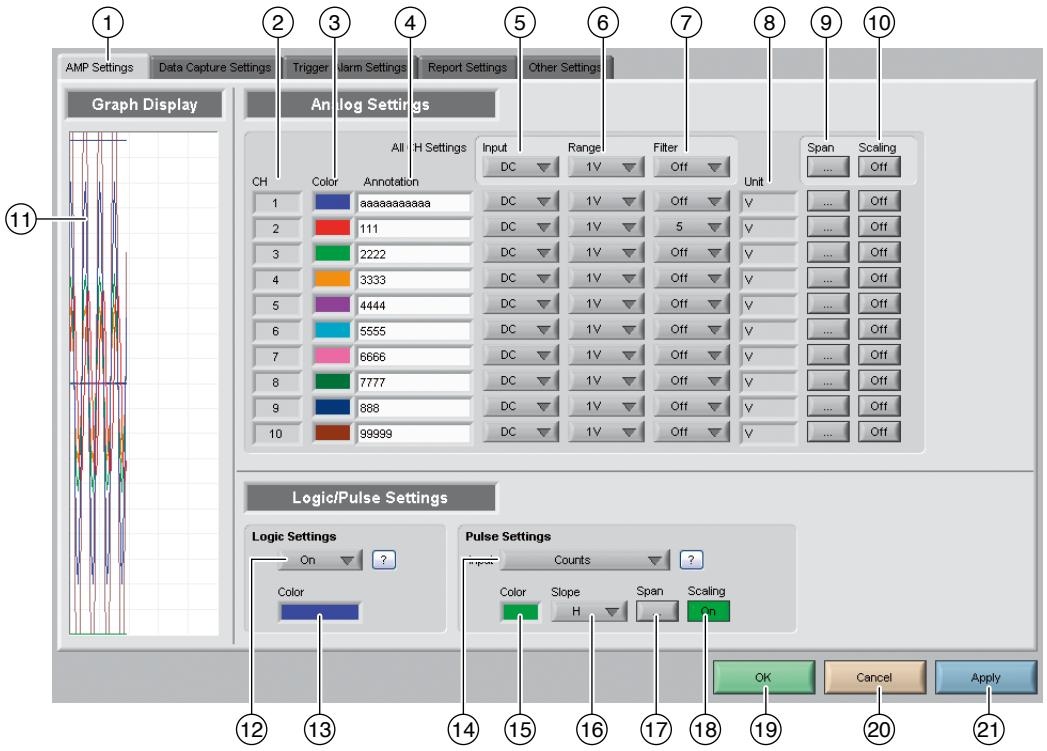
No.	Name	Description	Ref. Page No.
1	Replay Information	The replay information is displayed here. Sampling Interval: The sampling interval Start Time: The time at which data capture was started. Capture Time: The data capture time	
2	Print Screen	Click this button to print a copy of the screen.	
3	Close	Click this button to close the screen.	
4	X-Y Waveform Graph	The X-Y waveform graph is displayed here.	
5	Range	These buttons specify display of the scale values for the channels selected for the X and Y axes.	
6	ON/OFF	Click these buttons to specify the display as ON or OFF.	
7	X Axis/Y Axis Channel Settings	Use these buttons to select the channels for the X and Y axes.	
8	Cursor information	The cursor levels of the channels for which Range has been specified are shown here.	
9	Display Cursor	Click this button to move the cursor to the center of the graph.	

9. Settings Screens

This chapter describes the screens used to perform settings related to data capture.

9-1 AMP Settings

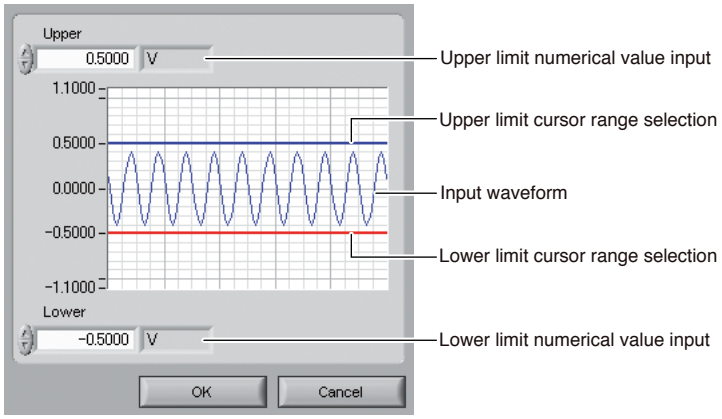
This screen is used to make the analog input, logic input, and pulse input settings.



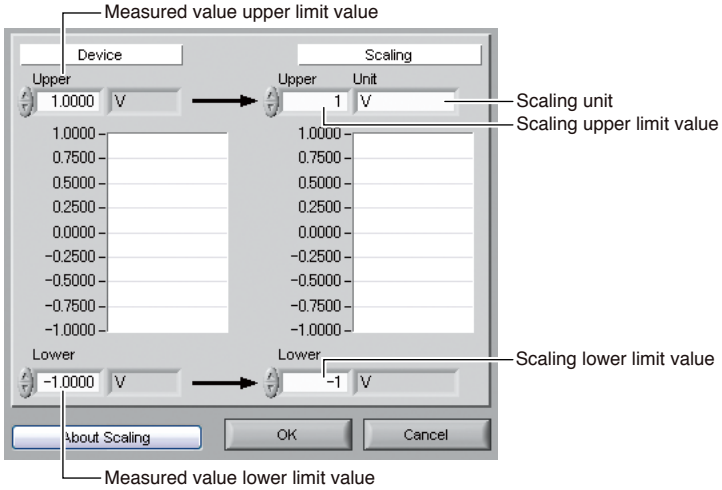
No.	Name	Description	Ref. Page No.
1	Settings tabs	These tabs are used to change the settings screen. AMP Settings: This tab is used to make input-related settings. Data Capture Settings: This tab used to make settings related to data capture. Trigger/Alarm Settings: This tab is used to make settings related to the trigger and alarm functions. Report Settings: This tab is used to make settings related to the daily report, monthly report, and Export to Direct Excel File functions Other Settings: This tab is used to make various other settings, to display information, and so forth.	
2	CH	These are the channel numbers for analog input.	
3	Color	The color used for the waveform for each channel can be specified here.	
4	Annotation	Each channel can be freely annotated (input the signal name, etc.)	
5	Input	Select the input type for each channel. Off: No input is made to that channel. DC: Select DC to perform voltage measurement. TEMP: Select TEMP to perform temperature measurement. RH: Select RH to perform humidity measurement.	
6	Range	These buttons are used to select the input range for each channel. DC: 20, 50, 100, 200, 500 (mV), 1, 2, 5, 10, 20, 50 V TEMP: TC-K, TC-J, TC-T, TC-R, TC-E, TC-B, TC-S, TC-N, TC-W RH: Fixed to 1 V; the unit is converted internally. 0V → 0%, 1V → 100%	
7	Filter	Moving average processing is used to eliminate the noise component. Off, 2, 5, 10, 20, 40 (times)	
8	Unit	The selected unit is displayed here.	

No.	Name	Description	Ref. Page No.
9	Span	Use these buttons to set the upper limit and lower limit values for the waveforms displayed in the waveform graph.	p.25
10	Scaling	Use these buttons to convert the unit.	p.25
11	Graph display	The waveforms for which settings have been made can be checked here. Click the "Apply" button to apply the settings that have been made.	
12	Logic Settings	Use this button to enable or disable logic settings. Off, On	
13	Color	Make the logic line color setting here.	
14	Input	Use the Input button to select the pulse input type. Off: Pulse input is not made. Revolutions: The number of pulses generated in one minute is counted. Counts: A cumulative count is made of the number of pulses generated in one sample. Inst.: The number of pulses generated in one sample is counted.	
15	Color	Make the pulse line color setting here.	
16	Slope	Use this button to select the pulse detection slope. H: Rising signals are counted. L: Falling signals are counted.	
17	Span	Use this button to set the upper limit and lower limit values for the waveforms displayed in the waveform graph. (Pulse)	p.25
18	Scaling	Use this button to convert the unit. (Pulse)	p.25
19	OK	Click this button to register your settings and close the screen.	
20	Cancel	Click this button to close the screen without registering your settings.	
21	Apply	Click this button to apply the settings made.	

9-1-1 Span Settings

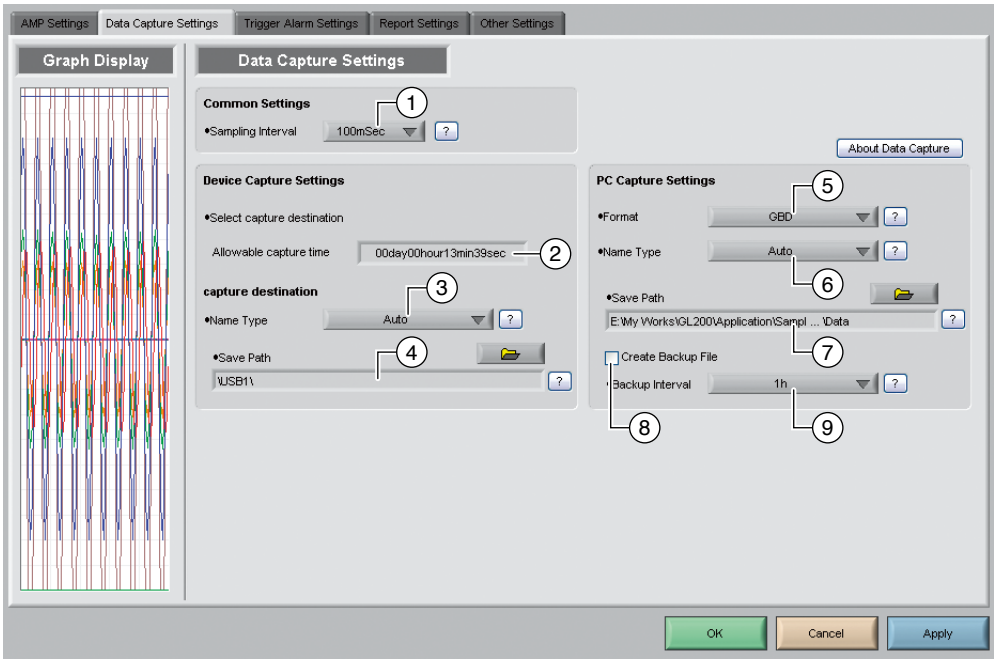


9-1-2 Scaling Settings



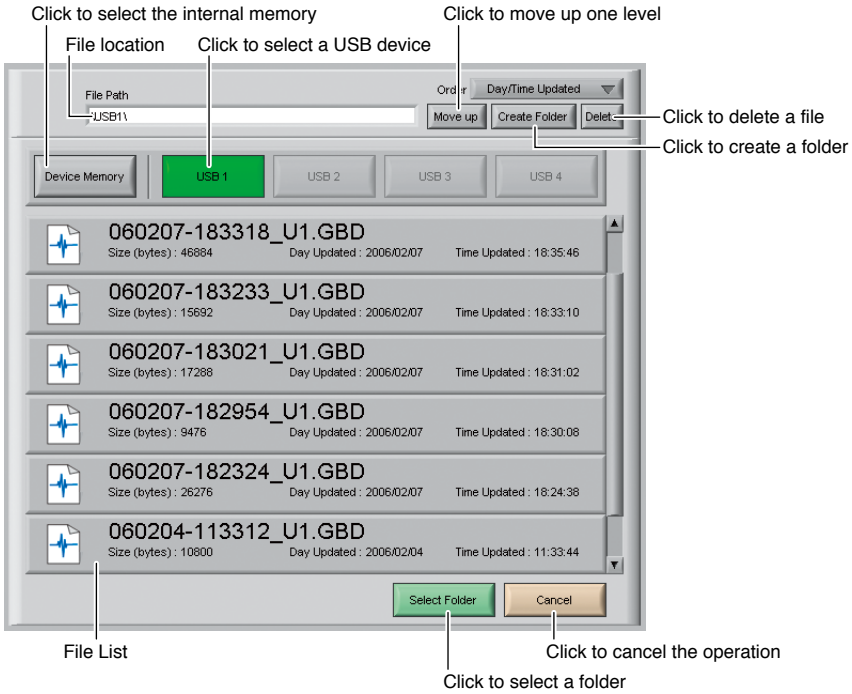
9-2 Data Capture Settings

Settings such as the Sampling Interval, Device Capture Settings and PC Capture Settings are made at this screen.



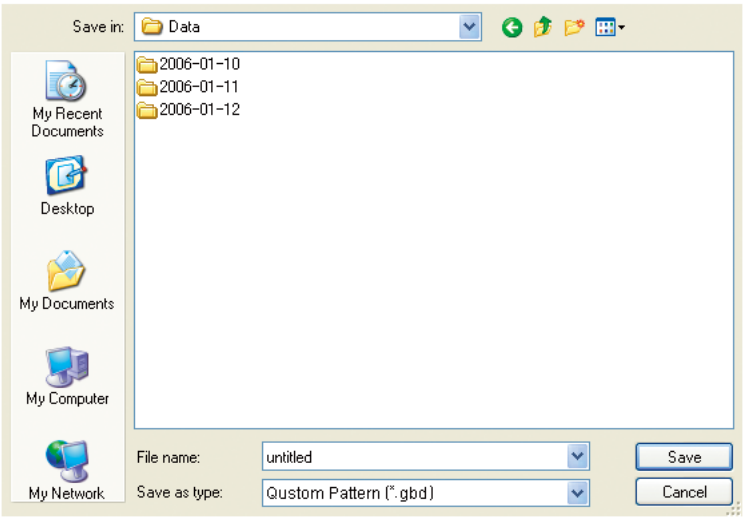
No.	Name	Description	Ref. Page No.
1	Sampling Interval	Use this button to select the sampling interval. 100, 200, 500 (ms), 1, 2, 5, 10, 20, 30 (s), 1, 2, 5, 10, 20, 30 (min), 1 (h)	
2	Allowable capture time	The length of time available for data capture to the selected device storage medium (internal memory or USB device) is displayed here.	
3	Name Type	Use this button to select the method for appending the file name. Auto: The date and time are used as the file name. User: The file name can be freely specified by the user.	
4	Save Path	The save destination at the device for the captured data is selected here.	p.27
5	Format	Use this button to select the format of the data saved to the PC (personal computer). GBD: The data is saved as binary data. When compared with a CSV file, the file size is somewhat small. CSV: The data is saved as text data in a format that can be displayed in Excel. Please note that the maximum number of samples that can be displayed in Excel is 65535.	
6	Name Type	Use this button to select the method for appending the file name. Auto: A folder with the date as the file name is created within the specified folder, and then a file with the date and time as the file name is created within the newly-created folder. User: The file name can be freely specified by the user.	
7	Save Path	The save destination at the PC (personal computer) for the captured data is selected here.	
8	Create Backup File	To enable this function, click the checkbox to display the check mark. The backup file is created at the same location as that specified in Item 7 "Save Path" above. The "_bk" file extension is appended to the file name.	
9	Backup Interval	Use this button to select the backup interval. During data capture, a backup data file is created at the specified intervals. If all the backup files are linked, the data will be same as that of the original data. 1, 2, 6, 12, 24 (h)	

9-2-1 Device Capture Settings



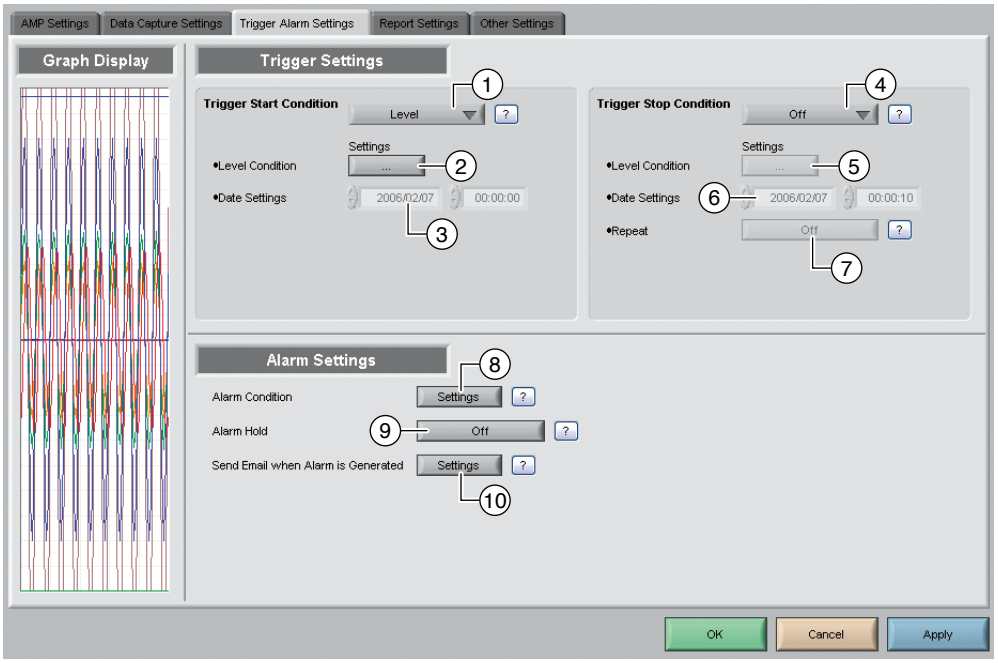
9-2-2 PC Capture Settings

The screen that is normally used to open Windows is used to make the settings for the PC save destination.



9-3 Trigger/Alarm Settings

Settings such as the trigger start condition, stop condition, alarm settings, and those for sending email are made at this screen.

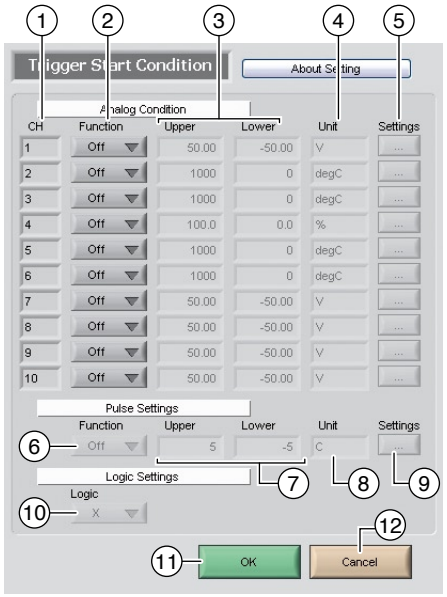


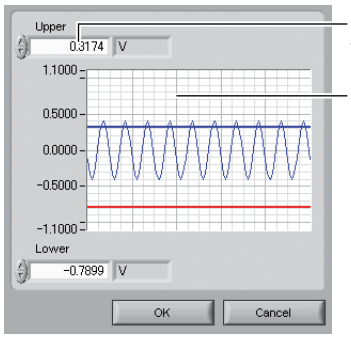
No.	Name	Description	Ref. Page No.
1	Trigger Start Condition	Use this button to select the trigger start condition. Off: There is no data capture start condition. Level: Data capture starts when the desired channel reaches the specified level value. External: Data capture starts when there is an input to the external terminal. Date: Data capture starts at the specified time. • When Repeat Capture is Off: Data capture starts at the specified date/time when the trigger is activated. • When Repeat Capture is On: Data capture starts at the specified time when the trigger is activated. (Select On if you want to capture data at the same time every day.)	
2	Level Condition	If "Level" has been selected for the start condition, make the required level settings here.	p.29
3	Date Settings	If "Date" has been selected for the start condition, make the required date settings here.	
4	Trigger Stop Condition	This parameter specifies the condition for stopping data capture. Off: There is no data capture stop condition. Level: Data capture stops when the desired channel reaches the specified level value. External: Data capture stops when there is an input to the external terminal. Date: Data capture stops at the specified time. • When Repeat Capture is Off: Data capture stops at the specified date/time when the trigger is activated. • When Repeat Capture is On: Data capture stops at the specified time when the trigger is activated. (Select On if you want to capture data at the same time every day. Time: Data capture stops when data has been captured for the specified length of time.	
5	Level Condition	If "Level" has been selected for the stop condition, make the required level settings here.	p.29
6	Date Settings	If "Date" has been selected for the stop condition, make the required date settings here.	
7	Repeat	If On has been selected, the device proceeds to perform the next data capture operation after a stop trigger has been generated.	
8	Alarm Condition	Use this button to make the alarm level settings for each input.	p.30

No.	Name	Description	Ref. Page No.
9	Alarm Hold	This parameter specifies whether to maintain or clear the alarm status. On: Once an alarm has been generated, the alarm status is maintained. The alarm generated on each channel is retained together with the alarm output status. To clear the alarm status, click the "Alarm Clear" button displayed in the "Alarm Screen" described in Item 15 of Section 8-1, "Y-T". Off: The alarm generated status is not maintained. If the alarm status is canceled, the alarm status and alarm output for each channel are canceled.	
10	Send Email when Alarm is Generated	Use this button to set the conditions for sending an email. An email can be sent when an alarm has been generated. (However, an email sending environment must be enabled.)	p.30

9-3-1 Level Condition

If "Level" has been selected for the Trigger setting, the "Level Condition" settings must be made.

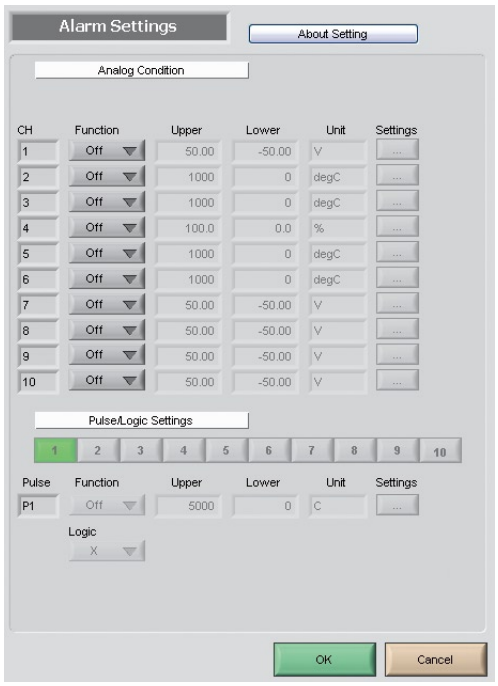




No.	Name	Description
1	CH	The channel numbers are displayed here.
2	Function	Use this button to select the trigger level detection mode. Off: Disabled Hi: Detection is performed when the signal is rising. Lo: Detection is performed when the signal is falling. Win In: Detection is performed when the value is within the specified range. Win Out: Detection is performed when the value is outside the specified range.
3	Upper/Lower	The level settings are displayed here.
4	Unit	The unit is displayed here.
5	Settings	Click this button to make the level settings.
6	Function	Use this button to select the pulse level detection mode. Off: Disabled Hi: Detection is performed when the signal is rising. Lo: Detection is performed when the signal is falling. Win In: Detection is performed when the value is within the specified range. Win Out: Detection is performed when the value is outside the specified range.
7	Upper/Lower	The level settings are displayed here.
8	Unit	The unit is displayed here.
9	Settings	Click this button to make the pulse settings.
10	Logic	Use this button to select the logic setting. X: Disabled H: Detection is performed when the signal is rising. L: Detection is performed when the signal is falling.
11	OK	Click this button to register your settings and close the screen.
12	Cancel	Click this button to close the screen without registering your settings.

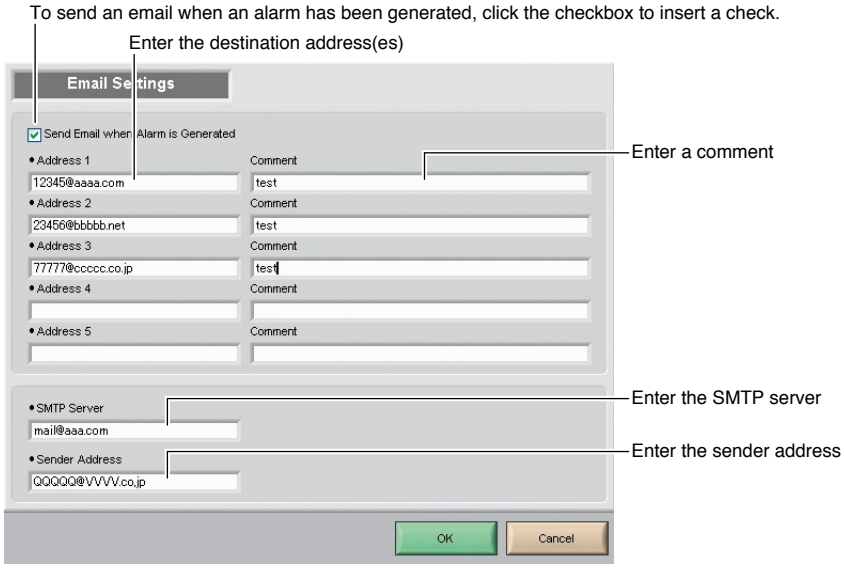
9-3-2 Alarm Condition

The alarm level settings for each input are made at this screen.
The settings are the same as those described in Section 9-3-1, "Level Condition".



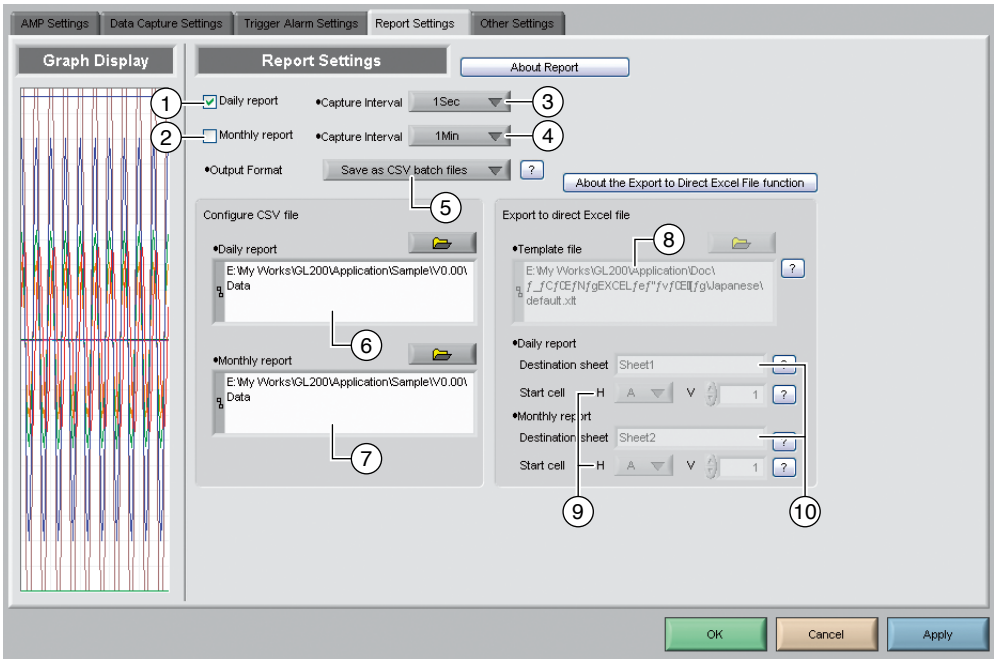
9-3-3 Send Email when Alarm is Generated

An email can be sent to a specified email address (or addresses) when an alarm is generated. (An email sending environment must be enabled.)



9-4 Report Settings

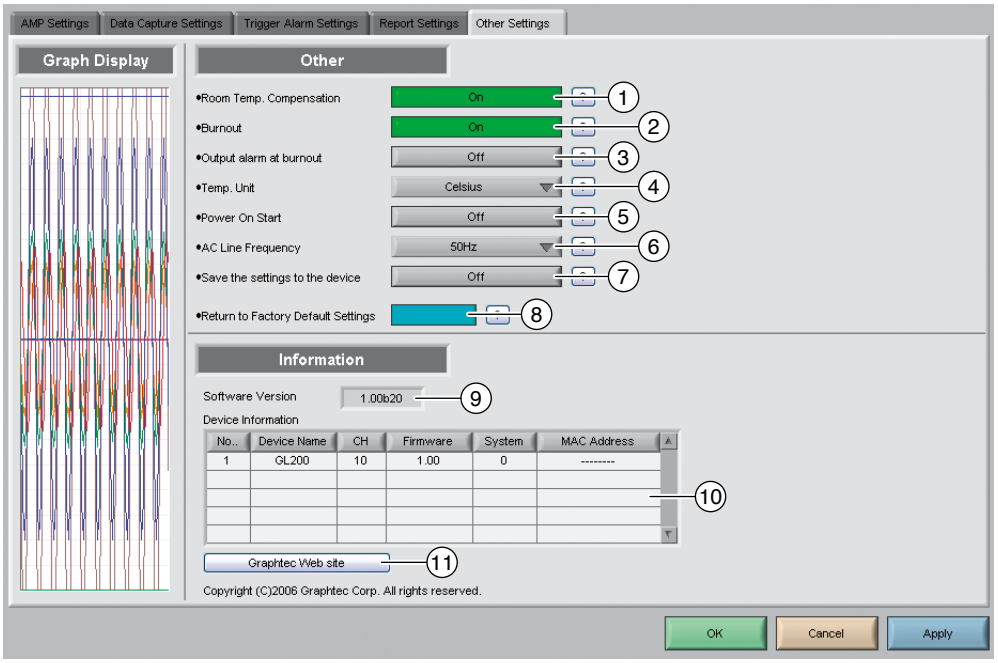
The daily report and monthly report settings, as well as the Direct to Excel settings, are made at this screen.
The daily and monthly reports are created as separate CSV files at capture intervals that are separate from those of the captured data.
The Export to Direct Excel File function transfers data in real time to an Excel file as it is being captured.
If a template is used for the Excel file, waveforms can also be drawn in Excel in real time.



No.	Name	Description	Ref. Page No.
1	Daily report	Click this checkbox to enter a check and enable the Daily Report function.	
2	Monthly report	Click this checkbox to enter a check and enable the Monthly Report function.	
3	Capture Interval	Use this button to select the daily capture interval.	
4	Capture Interval	Use this button to select the monthly capture interval.	
5	Output Format	Use this button to select the output format for the report(s). Save as CSV batch files: The data is saved as CSV batch files. Export to direct Excel file: The captured data is exported directly to Excel. If a template file that was created in Excel is used, an original report can be created in real time. The template files that were provided as standard accessories can also be used.	
6	Configure CSV file: Daily report	This parameter is used to specify the save destination for the daily report.	
7	Configure CSV file: Monthly report	This parameter is used to specify the save destination for the monthly report.	
8	Template file	The template file settings for the Export to Direct Excel File function are made here. Files with the "xlt" and "xls" extensions can be used. Template files are provided as standard in the "Temp" folder that is installed with this software.	
9	Destination sheet	This parameter is used to specify the name of the specified template sheet.	
10	Start cell	This parameter is used to specify the start position on the sheet from which to transfer data.	

9-5 Other Settings

This screen is used to make various other settings and to display information.



No.	Name	Description	Ref. Page No.
1	Room Temp. Compensation	This parameter is used when thermocouples are used to perform temperature measurement. (Always select On for this setting.)	
2	Burnout	This parameter is used to report a thermocouple sensor line break.	
3	Output alarm at burnout	This parameter is used to output an alarm when a burnout has occurred.	
4	Temp. Unit	The display unit can be switched between Celsius and Fahrenheit.	
5	Power On Start	Data capture starts automatically as soon as the power to the device is turned on. This setting can only be specified for data capture to the device. If On has been selected, also select On for the "Save the settings to the device" parameter.	
6	AC Line Frequency	Set the voltage frequency to suit the area where the device will be used. Be sure to select the correct frequency, as an incorrect setting affects the noise reduction capability. Please refer to the User's Manual for your device for further details.	
7	Save the settings to the device	Use this button to specify whether or not settings are saved to the device. If Off has been selected, the device returns to the setup status it was in prior to the software being connected when it is restarted.	
8	Return to Factory Default Settings	Click this button to return the settings to the default values.	
9	Software Version	The software version is displayed here.	
10	Device Information	Information relating to the connected device is displayed here.	
11	Graphtec Web site	Click this button to access the Graphtec web site.	

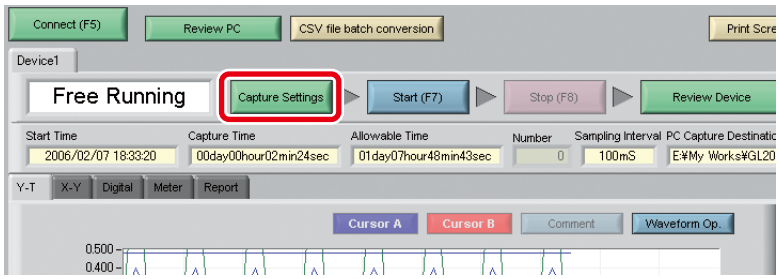
10. Operating Procedure

This chapter describes the basic operating procedure.
The operating procedure starts with the software and the device in the connected status. For the connection procedure, see Section 4, "Connecting to a PC (Personal Computer)".
The settings that are not addressed in the following sections are the factory default settings.

No.	Operation	Description
1	Capture Settings	Make the settings required for data capture.
2	Start	Start data capture.
3	Displaying past data during a data capture operation	Select Off for "Scroll" to display past data.
4	Stop	Stop data capture.
5	Replay Data	Replay data captured to the PC (personal computer).

10-1 Capture Settings

Click the "Capture Settings" button to make the settings required for data capture.

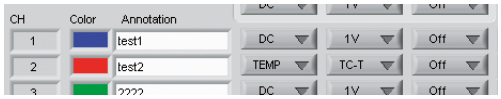


10-1-1 AMP Settings

Make the input settings shown below.

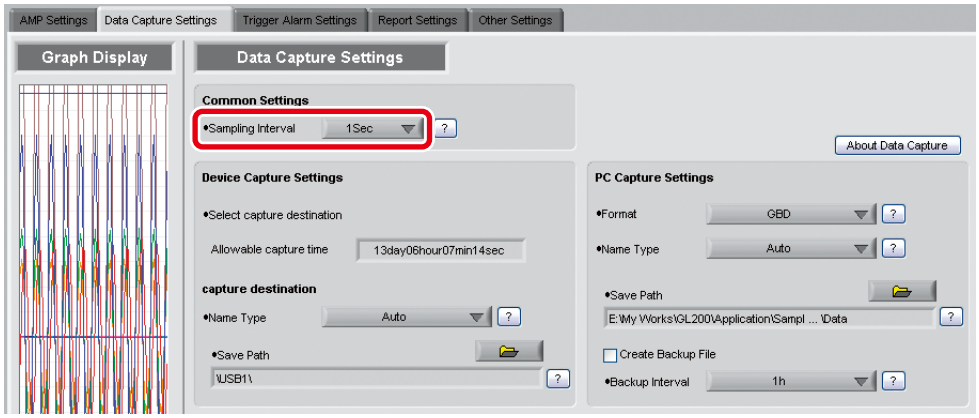
CH used	2 channels (CH 1 and CH 2)
Input	CH 1: DC CH 2: TEMP
Range	CH 1: IV CH 2: TC-T

Make the settings as shown in the following screen:



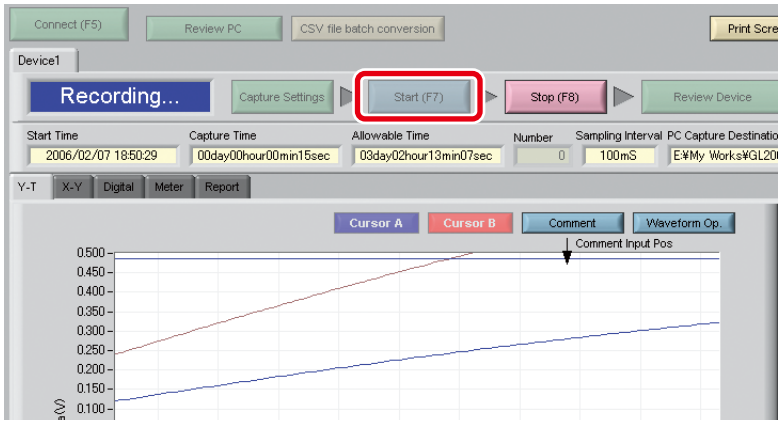
10-1-2 Data Capture Settings

When the settings described in Subsection 10-1-1, "AMP Settings" have been made, click the "Data Capture Settings" tab. Here, we will make the settings related to data capture.
Select 1Sec for the sampling interval. Leave all the other settings unchanged. (Device capture destination: Device Memory; PC capture destination: the folder to which this software was installed)



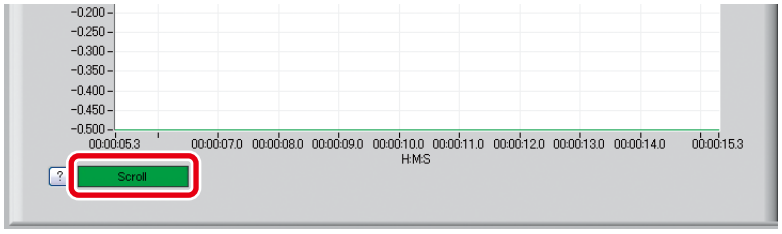
10-2 Start

Click the "Start" button to start capturing actual data.

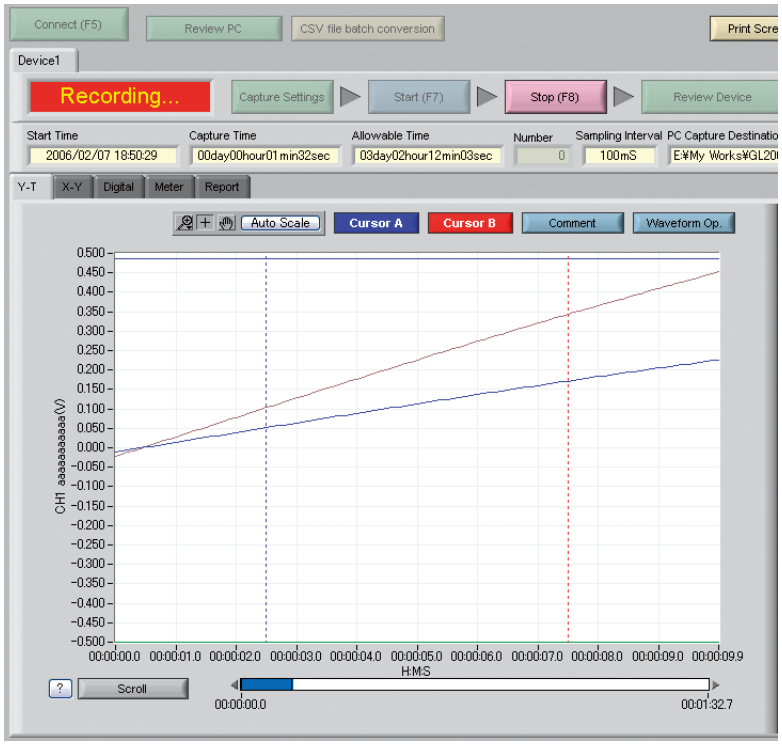


10-3 Displaying past data during a data capture operation

If Off is selected for the waveform "Scroll" button during a data capture operation, past data can be viewed.
Click the "Scroll" button.

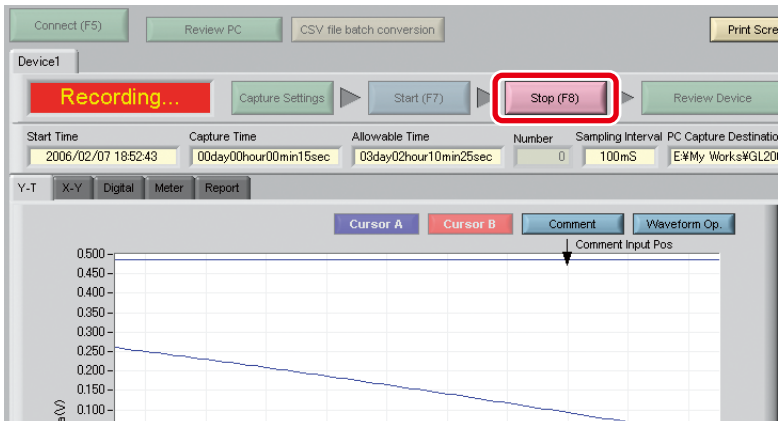


The scrolling operation will be halted, enabling past data to be displayed in the scroll bar. Moreover, moving the cursors enables the cursor level values to be viewed.
To return to the waveform scrolling operation, click the "Scroll" button once again.



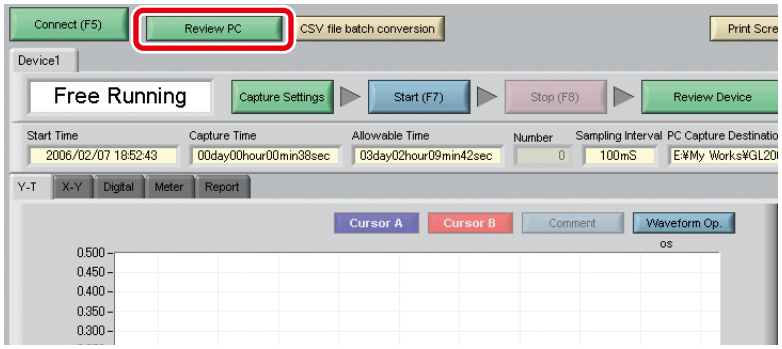
10-4 Stop

Click the "Stop" button. Data capture stops, and the device returns to the Free Running status.

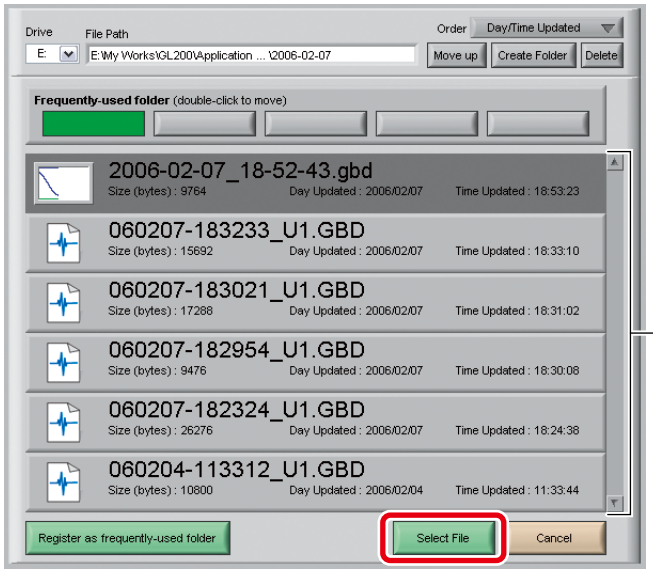


10-5 Replay Data

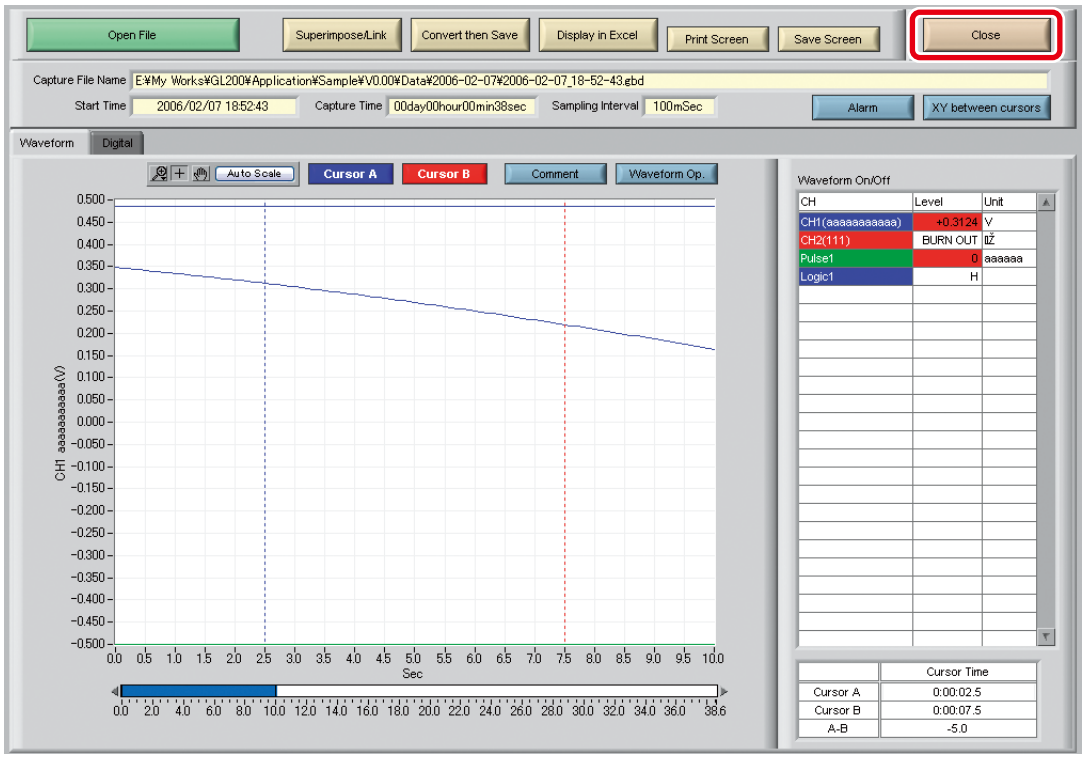
Data that has been captured to the PC (personal computer) can be replayed. Replaying the data enables you to view the captured data, and aligning the cursors enables you to browse the reference values.
Click the "Review PC" button.



The file selection screen opens. Open the file to which the data was captured (Section 10-2). A thumbnail waveform is displayed at the left of each file name, enabling you to confirm the data contents without opening each file.
Select the file that you want to open, and then click the "Select File" button.



The selected file is replayed.
While the data is being replayed, you can move the scroll bar to view the waveforms, or align the cursors to browse the reference values. In addition to these, various other functions can also be used. For further details, see Section 8-12, "Review PC (Waveform Display)". To end data replay, click the "Close" button.



Specifications are subject to change without notice.

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